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Automatic Equipment Cuts Painting Cost

Frames for Ford Cars Cleaned, Painted, Dried and Delivered to Freight Car Door at Rate of Ten a Minute —Continuous Conveyors Reduce Labor

AUTOMOBILE frames are cleaned, painted and dried and delivered in a continuous stream to a car door ready for loading at the rate of ten a minute by means of a new painting and conveying unit recently placed in operation for handling frames for Ford cars.

This is one of the most interesting recent developments in the provision of the continuous automatic equipment for increasing production and cutting down costs in the manufacture of motor car parts in large quantities and with its use all handling by hand is eliminated from the time the frame is inspected after riveting until the painted frames are loaded on cars. This installation has resulted in a 50 per cent saving in labor.

Frames for Ford Automobiles Are Progressively Assembled along a 175-ft. Line. They are slid along a table at the back of the riveting presses for the successive riveting operations

In connection with this unit a progressive assembling line 175 ft. long is provided for assembling the various parts of the passenger car frames. Side sections are formed on presses located below the start of this line. Various small parts are delivered from forming presses through two gravity chutes on to the assembly line. Following the plan generally used in the assembly of an automobile chassis the parts are delivered to the line at points near where they are to be placed on the frames. The frame assembly work is limited to various riveting operations which are done on 22 horning and wiring presses located 6 to 10 ft. apart. Back of the presses is an assembly table of heavy plate construction 9 ft. wide and 3 ft. high.

When a press operator finishes his riveting operation he slides the frame sideways along on the table to a point within reach of the next riveting press operator. The presses are a sufficient distance apart to provide storage space on the table for one frame between two machines and there is sufficient clearance to permit the operator to pass around between his press and the table. With this arrangement there is a straight line movement of work along the assembly table. The riveting unit has a daily capacity of 4000 frames.

Connected at right angles to the end of the assembling line is a section of table 20 ft. long and 9 ft. wide that connects with the first conveyor line of the painting unit, which is in parallel line with the assembling line. This table serves as a storage space for finished frames which are swung around when pushed on the table so that they are lengthways with the conveyor. At the end of this table the frames are in-

spected for proper riveting and the inspector turns the frame over on to the end of the conveyor, which permits him at the same time to inspect the opposite side of the frame. Opposite the passenger car frame assembly line is another assembly line for truck frames, which form about 20 per cent of the output and which are delivered to the same painting unit.

Two Separate Conveying Units

There are two separate conveying units for the entire outfit, one for the cleaning and painting operations and the other for handling the frames through the drying oven and carrying them along to the loading platform. The first conveyor, approximately 100 ft. in length, has two 15-ft. sections for washing, a 37-ft. section for drying, a 15-ft. section for spraying and a 16-ft. section for elevating the frame to the drying oven conveyor.

The frame, which lies flat and lengthways on the cleaning and painting conveyor, is first given a rinsing bath in a strong caustic solution, and is then washed in clear water at boiling temperature. The conveyor passes over tanks, one containing the water and the other the solution. The water and caustic solution are heated by live steam from the boiler house and are forced over the frame by two centrifugal high-pressure pumps through 48 nozzles connected to each pump, giving a water pressure of 35 lb. per sq. in. A fan exhausts the steam from the tanks into a hood having an outlet to the roof. After rinsing, the frames pass through the drying section in which a temperature of approximately 140 deg. is maintained by means of a forced draft from the paint drying oven.

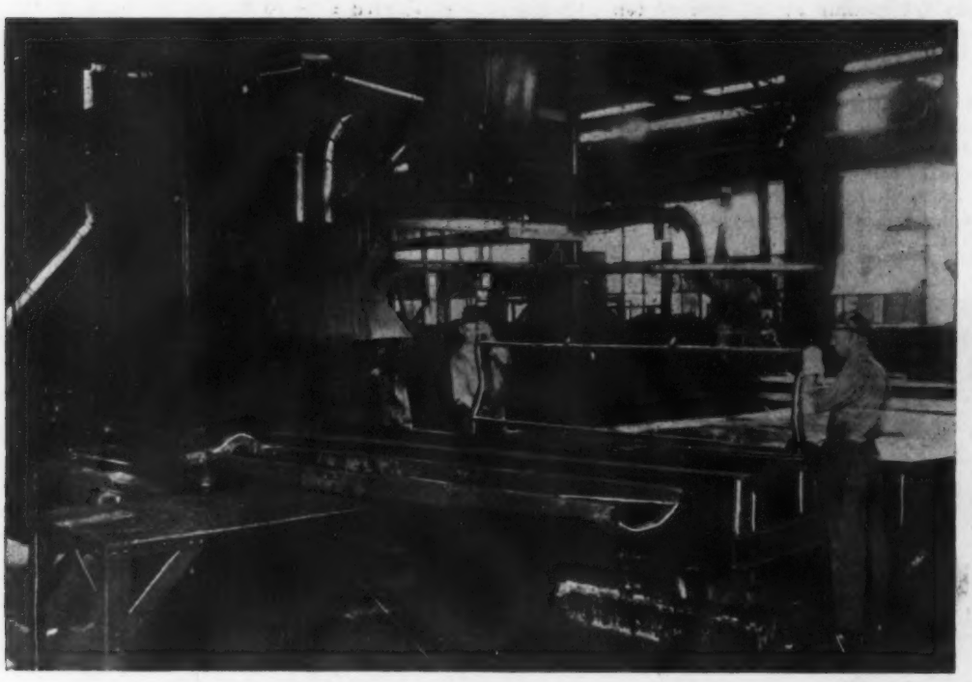
As the work passes through the painting section the coating which is made according to standard specifications of the Ford Motor Co. is sprayed on the frames by means of a spraying machine designed along standard lines. There are 15 sprays, pressure for which is supplied by a high-pressure air tank connected to air compressors in the engine room. Surplus paint falls to a drip pan, from which it is pumped back to the painting machine. Another pump delivers the paint from a mixing barrel to the machine.

Second Conveyor Takes Painted Frames to Drying Oven and to Loading Platform

The conveyor after passing through the painting section turns upward 45 deg., and when the frame has reached the highest point on the conveyor it drops automatically to a vertical position. Then loader chains pick it up and deposit it on a hook on the second or main conveyor that passes on in a straight line into the drying oven. The frames are suspended in a vertical position on this conveyor, the rear cross member hanging on hooks which are on 8-in. centers.

The drying oven is 196 ft. long, 16 ft. wide and is divided by partitions into three sections. However, one section extends only one-half the total length, as the floor space that would be taken up by that section were it the full length of the oven, is occupied by the washing and painting equipment. The oven is of the open-end tunnel type and a novel feature is that there are no hoods in the ends, as correct distribution of the warm air entering and the fumes exhausted make hoods unnecessary. The conveyor turns at the ends of the oven and the frames entering at one side are carried to one end then through a complete circuit of the oven, or a total distance of approximately 500 ft.

Leaving the oven, the conveyor passes outside of the building along a covered loading platform 200 ft. long. Here men lift the frames from the moving conveyor and load them into box cars at the side of the platform. The conveyor turns back into the building through the side wall and completes its circuit passing over the top of the washing and painting conveyor.



After a Frame Is Assembled It Passes from the Assembly Line Across a Short Table from Which It Is Delivered onto the Cleaning and Painting Conveyor Unit. The view shows the two inspectors turning the frame over onto the conveyor. The frame is not handled again by hand until, after being cleaned, painted and dried, it is lifted from the conveyor and loaded onto a car. The cleaning section of the equipment is shown at the left.

One hour and 15 minutes after the frame is delivered to the first conveyor it passes cleaned, painted and dried, from the discharge end of the drying conveyor. From 5 to 20 min. later, depending on the position of the car on the loading track, it is lifted from the conveyor and loaded into a car. When unloaded at the Ford assembly plant it is ready for the chassis assembly.

Direct Oil-Fired Heater for Drying Oven

The drying oven is heated by two seven-section McCann-Harrison direct oil fired heaters provided with a standard fuel control system for uniform temperature, the control being by means of an air gage. Consequently thermostatic control is unnecessary. Hot air is forced through the tubes of the heaters and distributing ducts in the oven by a Clarage Multiblade fan with a capacity of 14,000 cu. ft. of air per minute and a duplicate fan located at the opposite end of the oven exhausts the fumes. The temperature of the oven at its entrance is about 110 deg. Fahr. This gradually increases to 200 deg. and then to 260 deg. at the hot zone. At the discharging end it falls to about 120 deg.

The Conveyor After Leaving the Painting Section Turns Upward 45 Deg. The frame, which heretofore has moved in a horizontal position, is grabbed by loader chains and is picked up automatically by the drying oven conveyor on which it drops to a vertical position. This picture shows the inclined section of the first conveyor

The heat in the frame aids in baking the enamel during the movement of the frames through the lower end of the oven after they have passed the hot zone. Owing to the high efficiency of the heaters the gases of combustion leave the heater at a temperature of only about 180 deg. A special attendant is not required for the heating units.

The main oven conveyor is driven by two 2-hp. motors through Ganschow speed transformers, which make the required speed reduction. The washing and painting conveyor is driven through a gear reduction set by one 5-hp. motor with a speed of 900 r.p.m. The washing and painting conveyor moves at a speed of 84 ft. per min. and the drying oven conveyor at a speed of 7 ft. per min. This speed ratio is provided and the three motors synchronized so that one conveyor will carry frames in a horizontal position at a speed that is necessary to handle as many frames in this position as the oven conveyor will carry vertically 8 in. apart. The main control for the two conveyor units is at a point adjoining the loading of the drying conveyor. Push-button control is also provided at various points for the emergency stopping of the conveyors. The control is arranged so that the painting conveyor cannot run unless the drying oven conveyor is moving, but can be stopped independently. This avoids danger of work backing up on the loader, which would happen if the paint conveyor is operated when the drying oven conveyor is standing still.

The Frames Are Lifted Off While They Are Moving Along on the Conveyor on the Loading Platform and Are Loaded Into Box Cars As Shown.

Conveyors Have Handled 620 Frames an Hour

The conveyors have handled 620 frames in one hour and a record has been established of 5380 frames in 9 hr. Separate recording registers are provided at the first conveyor unit for passenger car and truck frames, and there is another register at the discharge end of the oven. These furnish a record of the total number of frames shipped during the day and the number left in the oven at night. The operation of the outfit requires only three men, one on the paint machine to look after mixing and to see that sprays are working properly, one to watch the loader and the third to look after the entire equipment and see that the pumps, heaters, dryers, etc., are functioning properly.

The oven conveyor was supplied by the Jervis B. Webb Co., the chain and sprockets for the paint conveyor by the Chain Belt Co. and the heaters by the McCann-Harrison Corporation.

For the 12 months ended June 30, American vessels brought into the United States 32.85 per cent of the value of our imports, and foreign vessels brought in 67.15 per cent. Exports in American vessels during that fiscal year were 39.15 per cent of the total shipped by water, while foreign vessels took 60.85 per cent. In both imports and exports the American percentage was slightly higher than in the previous fiscal year.

Conditions in Europe as Viewed by Truscon President

Standardization of product and methods of manufacture is the principal weapon of defense for the American manufacturer in meeting European competition, according to President Julius Kahn of the Truscon Steel Co., just returned from a trip to Europe. Standardization has made no such progress in Europe as in this country, he points out, and it has proved effective in reducing production costs here.

Mr. Kahn commented upon the marked improvement in European conditions this summer as compared with those of two years ago, when he visited Continental countries. He says that masses of the people in the affected countries, chiefly in Germany, appear highly favorable to the Dawes reparations program, and that industry is preparing for broader operations as soon as the plan becomes effective. He foresees a period of keener competition for export markets from European manufacturers, with the possible exception of the automobile industry. Nowhere in Europe did Mr. Kahn observe signs of food scarcity, although he found prices in Germany much higher than two years ago, owing to the recent return of gold standard money.

He is inclined to criticise the lack of interest in the export trade on the part of many American manufacturers, especially in view of vigorous efforts in Europe to stimulate export business. German manufacturers are handicapped because of the scarcity of money and high interest rates prevailing, preventing some industries from operating, even though they have orders on hand. This condition is making all interests in Germany eager for the loan promised the country under the Dawes program.

Banks in Germany, he states, are advertising they will pay 12 per cent interest on deposits and even larger for substantial amounts. In Germany there is little idleness and no poverty. German labor costs but a fourth or fifth of American labor, and it is competition of this kind which American manufacturers must meet. An optimistic spirit prevails among the people.

Under the Fascisti, Italy is declared to be making progress, but the condition of England is described as more serious than that of most other countries. He attributes England's difficulties principally to the high taxation, caused chiefly by the doles relief system for unemployment. High taxes cause high prices on manufactured products, which must be marketed in competition with the cheaper production of continental Europe. Mr. Kahn says the labor situation in England is virtually the only exception to the general improvement in Europe within the past two years.

COMING MEETINGS

September

Institute of Metals. Sept. 8 to 11. Autumn meeting in London. G. Shaw Scott, 36, Victoria Street, London, S. W. I. England, secretary.

National Sheet Metalware Association. Sept. 9 and 10. Annual meeting, Hotel Statler, Buffalo.

American Society of Mechanical Engineers. Sept. 15 to 18. Machine tool exhibit, Mason Laboratory, Sheffield Scientific School, Yale University, New Haven, Conn. For catalog and tickets, address Prof. S. W. Dudley, 400 Temple Street, New Haven, Conn.

American Society for Steel Treating. Sept. 22 to 26. Annual convention and exhibition. Headquarters, Copley-Plaza Hotel; exhibition, Commonwealth Pier, Boston. W. H. Eisenmann, 4600 Prospect Avenue, Cleveland, secretary.

American Mining Congress. Sept. 29 to Oct. 4. Annual convention, Sacramento, Cal. J. F. Callbraeth, 814 Munsey Building, Washington, secretary.

National Safety Council. Sept. 29 to Oct. 3. Annual safety congress, Brown Hotel and Hotel Seelbach, Louisville, Ky. W. H. Cameron, 168 North Michigan Avenue, Chicago, managing director.

October

American Electrochemical Society. Oct. 2 to 4. Fall meeting and round-table discussions. Hotel Tuller, Detroit. Dr. Colin G. Fink, Columbia University, New York, secretary.

American Institute of Mining and Metallurgical Engineers. Oct. 13 to 15. Annual inspection trip and meeting, at Birmingham. Frederick F. Sharpless, 29 West Thirty-ninth Street, New York, secretary.

American Foundrymen's Association. Oct. 13 to 18. Annual convention, Milwaukee. C. E. Hoyt, 140 South Dearborn Street, Chicago, secretary.

American Gear Manufacturers Association. Oct. 16 to 18. Semi-annual fall meeting, Briarcliff Lodge, Briarcliff Manor, N. Y. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

Service Stressed in Statement to Employees

In a statement to employees of the company at Youngstown, Pittsburgh, Canton and Vandergrift, President F. C. Biggert, Jr., of the United Engineering & Foundry Co., Pittsburgh, declares that the success of a business concern is measured by the service it renders.

"To render good and cheap service is the most important trick of any trade and it is common to them all," he states. "It is a trick that can be practiced in some degree by every member of an organization, but in the fullest sense it can only be well turned when all hands pull together.

"There are none of the old tricks in modern business methods. We know that the only trick worth while is to buy and sell quickly in large quantities and in such a manner as to add the least possible amount to the production cost of the goods. In other words, the only trick of any trade should be the trick of giving the most service for the least cost.

"The business men of former days believed that their profit was gained by the tricks of the trade and they were willing to spend any amount of time in working their tricks. The up-to-date trader asks a price for his services and tries to give the greatest possible service in the least possible time. The tricks of his trade have no effect upon the price of his goods; they are all planned to improve and cheapen his services."

Nova Scotia Steel Plant Fairly Busy

TORONTO, ONT., Sept. 2.—In a statement made by J. E. McLurg, vice-president of the British Empire Steel Corporation, it is pointed out that the Sydney, N. S., works, which closed down on Aug. 8, are in much better shape than the rest of the steel industry of Canada, taken as a whole. Production figures for the month of July show that of a total of 51,000 tons of steel ingots produced by the entire industry of Canada, the British Empire Steel Corporation produced 31,000 tons. He further pointed out that No. 8 blast furnace, now banked, will go on foundry iron early in September. The bar mill at the Sydney works started operations on Aug. 25 and it is now stated that rod, wire and nail mills will resume operations the first week in September.

To Discuss Reduction of Cost of Selling

Reducing the cost of selling industrial products will be the central theme of the program of the National Industrial Advertisers Association when it meets in Chicago on Oct. 13 and 14. The convention will be held at the Edgewater Beach Hotel.

Among those scheduled to take part are: George H. Corey, Cleveland Twist Drill Co.; Bennett Chapple, American Rolling Mill Co.; Keith J. Evans, Joseph T. Ryerson & Son, Inc.; A. H. Oberndorfer, Sivyer Steel Castings Co., Milwaukee; George F. Climo, Brown Hoisting Machine Co., Cleveland; W. A. Grieves, Jeffrey Mfg. Co., Columbus, Ohio; T. H. Bissell, International Nickel Co., New York; George W. Morrison, Ingersoll-Rand Co., New York; J. C. McQuiston, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; A. D. Guion,

Bridgeport Brass Co., Bridgeport, Conn.; R. E. Conder, Boston Woven Hose & Rubber Co., Boston; F. J. Maple, John A. Roebling's Sons Co., Trenton, N. J.; P. C. Gunion Hyatt Roller Bearing Co., Newark, N. J.; Julius S. Holl, Link-Belt Co., Chicago; W. W. French, Dodge Mfg. Co., Mishawaka, Ind.; R. C. Beadle, Combustion Engineering Corporation, New York; Guy S. Hamilton, Conveyors Corporation, Chicago; J. R. Hopkins, Chicago Belting Co.; W. L. Schaeffer, National Tube Co., Pittsburgh; Francis D. Bowman, Carborundum Co., Niagara Falls, N. Y.; E. J. Smythe, Fuller & Johnson Mfg. Co., Madison, Wis.; Ezra W. Clark, Clark Tructractor Co., Buchanan, Mich.; J. C. Winslow, Graver Corporation, East Chicago, Ind.; P. L. Thomson, Western Electric Co., New York; W. L. Doxsey, McMyler-Interstate Co., Bedford, Ohio; F. R. Davis, General Electric Co., Schenectady, N. Y.; and W. T. Hutcheson, Stewart Iron Works Co., Cincinnati.

Diesel Engine with Power at Every Stroke

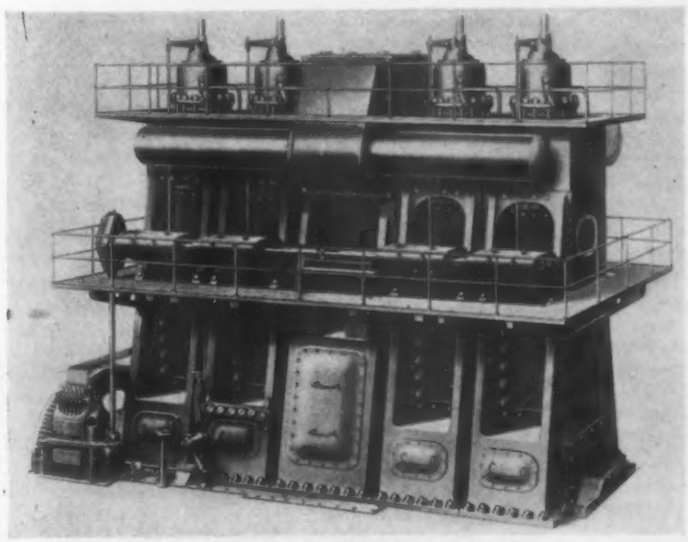
Worthington Development of Two-Cycle Double-Acting Prime Mover Promises Notable Widening of Oil Engine Field in Applicability and Economy

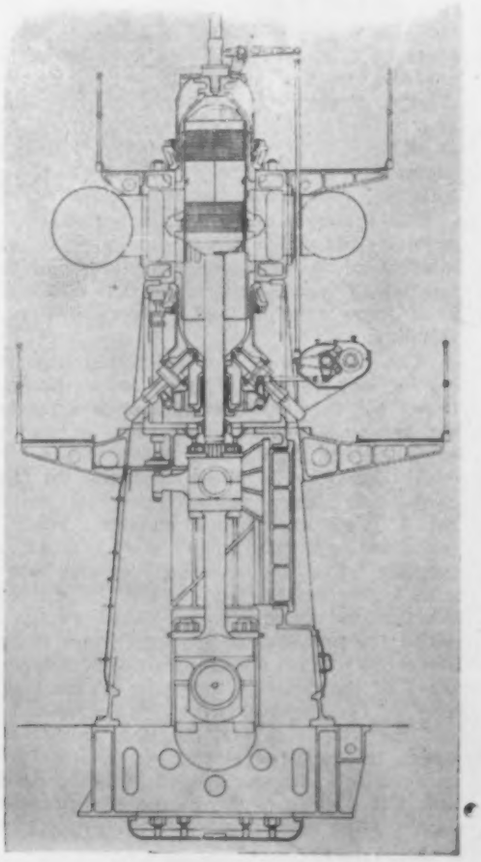
A NEW design of two-cycle, double-acting Diesel engine, which is expected to mark an epoch in the development of internal combustion power machinery, was demonstrated Aug. 28 at the Buffalo plant of the Worthington Pump & Machinery Corporation, New York.

Fuel economy comparable with that of the best types of Diesel engine, combined with dimensions, weight and construction cost per horsepower approaching those of reciprocating steam machinery, are claimed for the new development. A feature also emphasized is that from all indications the horsepower per cylinder can be carried to a much higher value than any yet attained in Diesel engines, which is important as increasing greatly the field of usefulness of Diesel-type power, and making it an active competitor of steam power machinery over a wider range than heretofore. The first engine built is rated at 600 to 800 hp. for a single-cylinder unit, at speeds of 90 to 120 r.p.m. The relatively small space taken per cylinder in terms of horsepower developed is a notable feature, as is therefore a multiplication of cylinders for an engine of larger total horsepower, but the details of economy of performance and of the commercial position of the engine await a paper promised for the meeting early in December of the American Society of Mechanical Engineers.

As noted later, and as indicated in the accompanying reproduced drawing, a feature is the original design of cylinder. It slides in a cast iron lining, fitted into a head at each end of chrome-vanadium forged steel, the two heads being independent and the differ-

IN the Worthington Diesel Engine, Each Stroke Is a Power Stroke, and Among Other Things Saving in Space and Reduction in Weight for a Given Power Are Expected to Widen the Field of Usefulness—as in Replacing Steam Equipment in Existing Ships. The double acting cylinder, composed of chrome-vanadium forged heads, holding a cast-iron barrel, is designed to facilitate the absorption of the extra amount of heat developed in the double-acting operation





ent temperature expansion coefficients of the steel and the cast iron being compensated for in the design. Opposite the middle of the cylinder, arranged around one semi-circle, are the exhaust ports and in the other semi-circumference are the scavenger ports for sweeping a volume of low pressure air through one end of the cylinder as the piston is compressing the other end preparatory to receiving its fuel charge. The demonstration included an inspection of the main exhaust, which proved smokeless, and a dismantling of the engine, which proved easy and rapid. The opening up was done to caliper working parts and generally to observe the condition of the interior.

The new engine was entirely designed and built in America, independently of foreign patents. Actual construction was preceded by nearly four years of intensive research and experiment, the leading collaborators in the research being O. E. Jorgensen of the technical staff of the Worthington company and Dr. C. E. Lucke, professor of mechanical engineering, Columbia University, New York. The inspiration behind the research campaign is stated to have been the recognized need of an improved Diesel engine for ship propulsion.

The problem was to produce an engine with all the advantages of the Diesel engine in fuel and general operating economy, but approaching, in dimensions, weight and speed per horsepower, closely enough to steam machinery to permit it to be substituted for such machinery in ships already built, at no prohibitive cost either for the engine or for the job of installation. An additional consideration of great importance to marine engineers was that of maneuvering qualities. A marine engine must be capable of being started, stopped and reversed quickly and with ease and certainty of control. In this particular is to be found one of the reasons why the reciprocating steam engine has so long held its ground in competition with both the steam turbine and the Diesel engine.

The engine is not only expected to solve the marine problems for which it was developed but also to be of interest to industrial and mechanical engineers, as the relation of space, weight and first cost to horsepower is of importance in land power plants as well as in shipping.

The basic principle underlying the Worthington engine may be briefly stated to be: in the four-cycle Diesel engine one stroke in four is a power-stroke; in the two-cycle engine one stroke in two; in the new engine every stroke is a power stroke. Its working cycle, therefore, is about the same as that of a reciprocating steam engine. The principle, of course, is not a novel one, but mechanical difficulties, chiefly concerned with the complicated heat stresses in the cylinder of a double-acting engine, have interfered with its successful application. The success of the Worthington design is attributed to the manner in which the problems of expansion and of heat removal are solved. With the major problem solved, the advantages of the double-acting type are obvious. The balance of the moving parts, for example, is simplified, and the weight saving, not only from the manner in which the required power per cylinder is distributed through four strokes instead of being concentrated in one, but also from the decreased provision needed to care for the momentum of moving parts and in other ways, is large.

The cylinder of the new engine may be described perhaps as composed of two single-acting cylinders, opposed end for end and working in opposite directions, their respective pistons flanged to the same rod, the scavenging and exhaust ports, cooling water circulation and expansion provisions of the two being virtually independent of each other. With this fundamental idea of the engine in view, the design is seen to be quite simple, following in all respects the best modern standards in Diesel engine practice. The plan followed for insuring the maximum strength and rigidity in the cylinder construction, combined with the necessary freedom for expansion and uniformity of heat transference, and with economy in materials, is both simple and effective.

The valve gear presents no particular novelty in design. There are three fuel spray valves, one on top of the upper end of the cylinder, and two in the bottom head on opposite sides of the piston-rod, entering at an angle. A noteworthy feature of the design is the manner in which these two valves are worked out so as to give a uniform and symmetrical distribution of the charge around the piston rod.

The reversing mechanism is also a feature. Each of the three valves has its own cam, all three geared to the same shaft. The cams are symmetrical, and to reverse the running direction all that is necessary is to shift all three cams simultaneously through 34 deg. on the shaft. This is accomplished by a worm shaft, which in turn is actuated by an oil-operated hydraulic mechanism controlled by a four-way cock, this in turn being operated by a single lever on the maneuvering platform.

The engine is started and stopped by a single lever, which as it is moved forward successively opens the air starting valves, then the fuel supply valves, simultaneously closing the air starting valves; the lever being then capable of setting, by a ratchet and pawl, at any desired fuel supply. For stopping the engine this lever is thrown back to the stop position. The starting and stopping lever and the reversing lever, although independent of each other in all other respects, are interlocked so that the engine must be brought to a full stop before reversing. Maneuvering control is, therefore, simple, prompt and effective. This positive, quick-operating reversing gear is expected to appeal strongly to marine engineers.

The new engine is regarded as a marked step toward enabling American ship owners to compete with foreign steamship lines.

Toronto Steel Plant May Resume

TORONTO, ONT., Sept. 2.—Notwithstanding reports that have been circulated from time to time during the past year regarding the dismantling of the plant of the Baldwin Canadian Steel Corporation, Ashbridges Bay, Toronto, and the fact that this plant has not been operated for about two years, it is now stated that if certain concessions in taxes are granted the corporation the plant will resume operations and provide employment to a large number of men. Sir Hugh Poynter, representing the corporation, told the Toronto City Council that if no tax relief was forthcoming from the city the plant would be dismantled.

Hoover Steel Ball Co. Expands

The Hoover Steel Ball Co., Ann Arbor, Mich., has purchased the Imperial Bearing Co., Detroit. The equipment of the latter plant will shortly be moved to Ann Arbor and housed in the Hoover buildings.

Plans call for a program that will not affect the supply of steel and other metal balls, for this part of the business will function the same as in the past. New machinery and equipment besides that purchased from the Imperial company is being added, so that ball thrust bearings, roller bearings and ball retainers will be produced for manufacturers using such products. Stress is laid on the fact that the new program does not include the manufacture of annular or radial ball bearings.

H. D. Runciman remains general manager and S. S. Strickland, manager of the Imperial plant, will be manager of the bearings division. Mr. Strickland replaces, as a director, Mr. Dobson, who has severed connection with the Hoover Steel Ball Co.

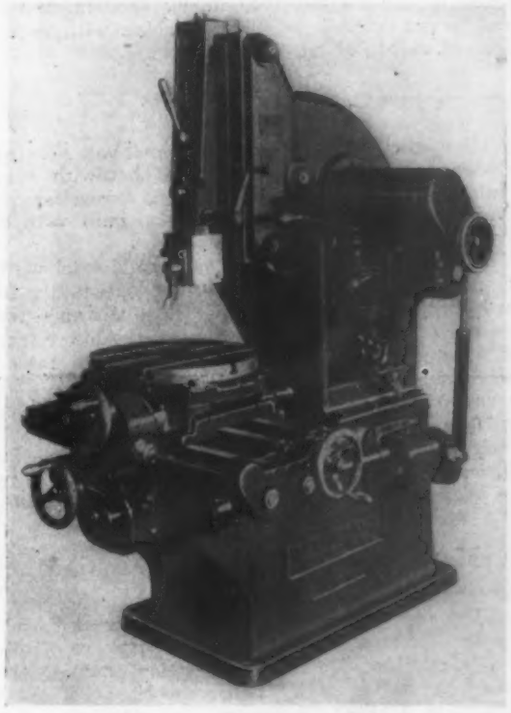
Following three fatal accidents in Wisconsin from electrical vibrators, used in shaking sand from foundry molds, in six weeks' time, the committee on accident causes and remedies of the safety division, Milwaukee Association of Commerce, is preparing for early publication a pamphlet dealing with safety measures in handling such vibrators. The publication is being made at the request of John A. Hoeveler, electrical engineer, Industrial Commission of Wisconsin.

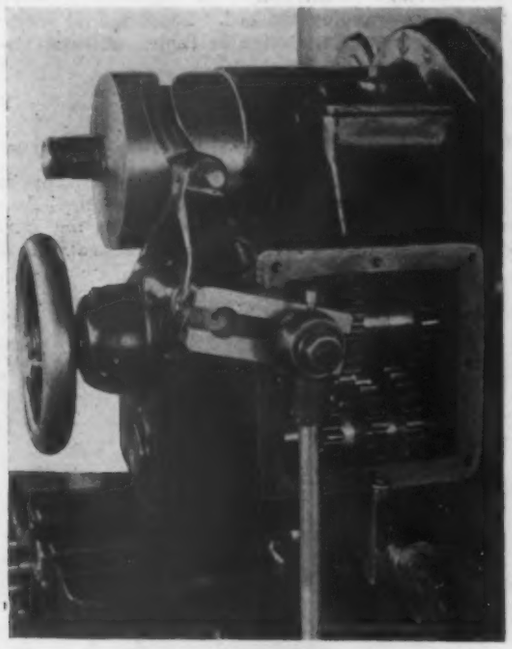
IMPROVED 6-IN. VERTICAL SHAPER

Selective Gear Drive to Ram and Rotary Table with 12 Indexing Notches Are Features

A redesigned 6-in. vertical shaper designated as the model B has been placed on the market by the Pratt & Whitney Co., Hartford.

As shown in the accompanying full-view illustration, the machine consists of a solid bed which mounts a rotary work table, and a column which supports the vertical ram and contains the ram-actuating mechanism. Angular adjustment, which is valuable in die cutting, is provided for the ram. The new machine is designed for either a built-in motor drive or a single-pulley belt drive from a line shaft. In either drive the speed of the main drive pulley is 450 r.p.m.





Selective Gear Drive to the Ram Is Among the Features of New Vertical Shaper Shown at Left

When arranged for individual motor drive a 3 hp. motor is mounted inside the bed, in which position it is too low to cause vibration, and being inclosed it is out of the way of chips and dirt. The motor is amply ventilated and is accessible for adjustment. It drives the large friction pulley at the side of the machine through a 3 in. belt, the tension of which is controlled by the screw adjustment of the hinged platform which mounts the motor. Space is provided on the rear of the column for whatever electrical control equipment is desired. The belt driven machine requires no change other than the elimination of the few motor drive parts. The change from one type of drive to the other may be made conveniently. The friction clutch incorporated in the driving pulley is operated by means of a lever at the right of the ram. The lever has three positions, namely, a working position, a neutral position, and a third position which applies a brake for stopping the ram quickly.

The power is taken into a gear box on the right-hand side of the column, and the selective gear drive provided to the ram is a feature of the new machine. Four speeds and a neutral position are provided and an H-shift lever forms a convenient means of control. Alloy steel spur gears are used, and the gears are Maag cut. The gear box is entirely inclosed, and the splash lubrication is employed. Power is taken from the gear box to the vertical ram by means of a large slotted eccentric and follower block which produce the slow power stroke and the quick return motion. The ram is counterbalanced.

The ram slide and ram form a separate unit on the front of the column. The slide is hinged at the top and has a screw adjustment at the bottom, so that the entire unit may be swung to any angle up to 5 deg. and locked in position. This construction permits the machining of the angular sides of dies without difficulty. An angular scale is provided to facilitate setting the ram, and a new feature has been added which permits it to be returned to the true vertical position without additional adjustment. The ram is thoroughly gibbed and is designed so that adjustments for wear may be made conveniently. A handwheel on the gear box permits of moving the ram through its entire travel for positioning at the start of a cut. The vertical position of the ram on its slide is obtained by a crank which operates a vertical screw and positioning nut through a pair of bevel gears. A binder handle locks the ram in position. The length of stroke of the ram is variable from 0 to 6½ in. by means of an adjustment on the end of the feed cam. The four speeds obtained from the gear box produce ram speeds of 33, 49, 76 and 116 strokes per minute.

The tool head is of a new design, which is claimed to increase the usefulness of the shaper. The tool post is carried in a clapper mounted so that the thrust of the cut forces it rigidly against the head. This clapper permits the tool to clear the work on the return stroke, thereby prolonging the life of the cutting edge. Attention is called to the elimination of the tool post binder screw, the tool being held by drawing the tool post against it from the back. This feature permits the tool post to pass over the work. The tool head may be rotated a full 360 deg., and solidly clamped in position. This feature is emphasized as increasing further the range of work to which the machine is applicable, also making the setting up of work much simpler.

Power feed for the machine is obtained from the feed cam on the upper right-hand side of the column. This cam is driven by an extension of a shaft from the speed gear box. A side cam with a single rise is employed which functions once for every stroke of the ram. The cam follower actuates a bell crank so that the feed is supplied by a rocker motion at the end of the stroke. The lever which connects the bell crank with the feed gear box is adjustable on the crank for

varying the amount of feed. This lever consists of a sleeve containing a plunger and spring. The latter is stiff enough to transmit power under regular machine working conditions, but should the work or tool become jammed by careless handling, this plunger will simply pump up and down against the spring and no harm will result. Removable cast iron guards cover the feed cam and follower. The feed gear box is located at the right-hand side of the bed directly below the feed cam. A notched wheel and a double pawl take the rocker motion delivered by the connecting rod and change it to an intermittent rotary motion. The feed box provides a forward drive, neutral position and reverse feed drive, and is controlled by a push and pull knob on the front of the bed.

The carriage of the shaper is wide and is mounted on transverse ways on the bed. Longitudinal ways on the carriage mount the circular table. A total transverse travel of 14 in. and a longitudinal travel of 25 in. are available. Handwheels and micrometer dials for hand traversing in either direction are provided and binders are furnished for locking both slides in position when desired. The 19¾-in. rotary table, which is an outstanding feature of the new 6-in. vertical shaper, is provided with 12 indexing notches so that quick indexing may be had for ½, ⅓, ¼, 1/6 and 1/12 of a complete circle. Power feeds for both the longitudinal and transverse slides are regular equipment with the shaper and these feeds are controlled by slip gears. Rotary power feed to the circular table may be furnished.

The distance from the table top to the under side of the ram bearing is 10½ in. and the maximum distance between the table and the ram is 15 in. The floor space occupied by the shaper is 53 in. by 68¼ in. and the overall height is 83¾ in. The machine with regular equipment weighs about 4550 lb.

Cam-Feed Drilling and Boring Machine

For high production of work involving drilling, boring and facing operations, Baker Brothers, Inc., Toledo, Ohio, are offering the new cam-feed drilling and boring machine shown in the accompanying illustration. The

Cam-Feed Drilling and Boring for Rapid Production Work. The machine is especially adapted to facing operations

machine, which is designated as the No. 24, is especially adapted to facing work as the cam can be designed to feed the tool to the required depth, then have it dwell long enough to completely clean up the surface, after which it causes the spindle to be quickly withdrawn. Intermittent drilling can be done also, the cam giving a rapid advance automatically between the holes that are to be bored or drilled.

In operating the machine the operator has both hands free at all times for the removal and chucking of the work, which is a feature emphasized as permitting of increased production. Many pieces can be held in the hand between stops to keep them from revolving, so that the operator's handling time is minimized. The machine itself is simple in construction. It is equipped with alloy steel heat-treated gears and ball bearings. The standard machine is illustrated herewith but a special two-spindle machine for boring connecting rods is available also. The machine is also built with circular full-automatic indexing table.

The capacity for drilling through solid steel with a high-speed drill is 1½ in. Feeds and speeds are furnished special for each machine. The distance from the center of the spindle to the face of the lower frame is 10 in., and the maximum distance from the table to the end of the spindle in its highest position is 22 in. The size of the finished surface of the plain table is 15 x 16 in. The floor space required is 28 x 36 in. for the belt driven machine, and 27 x 57 in. for the machine with motor drive arrangement. The height of the machine is 87 in. The belt drive unit weighs 2550 lb.

Matthew Addy Co. Reorganization

Reorganization of the Matthew Addy Co., one of the oldest pig iron houses in the country, with main offices in Cincinnati and branches in a number of other cities, is provided for in a proposition made to creditors of the company by Benjamin N. Ford, W. W. Hearne and A. Burt Champion, vice-presidents of the company. This will be submitted to a meeting of the creditors to be held in Cincinnati Sept. 10. The company has been seriously hampered by lack of working capital and by unfavorable conditions in the pig iron, coal and coke markets, and recently called a meeting of its creditors in order to discuss ways and means of liquidating claims against it.

Debts of the company are said to run over $500,000, with sufficient assets to meet all claims, if time is given for favorable liquidation. The assets include coal mines in West Virginia and fluorspar properties in Kentucky.

At a meeting of creditors held in Cincinnati August 25 and 26, Messrs. Ford, Hearne and Champion made the proposition to raise $250,000 cash to be put into the reorganized company, half of the amount to be used as working capital and the other half to be applied on the debts. Under this arrangement all creditors with claims of less than $1,000 would be paid in full, while the remainder would be divided among the creditors in proportion to their claims. In addition, it is proposed that payment of the balance be undertaken at the rate of 1 per cent per month after the new company has been in operation six months. In addition, if the earnings of the company exceed 10 per cent, the additional sums are to be applied on the debts. A committee of the creditors will be appointed to cooperate with the management of the new company.

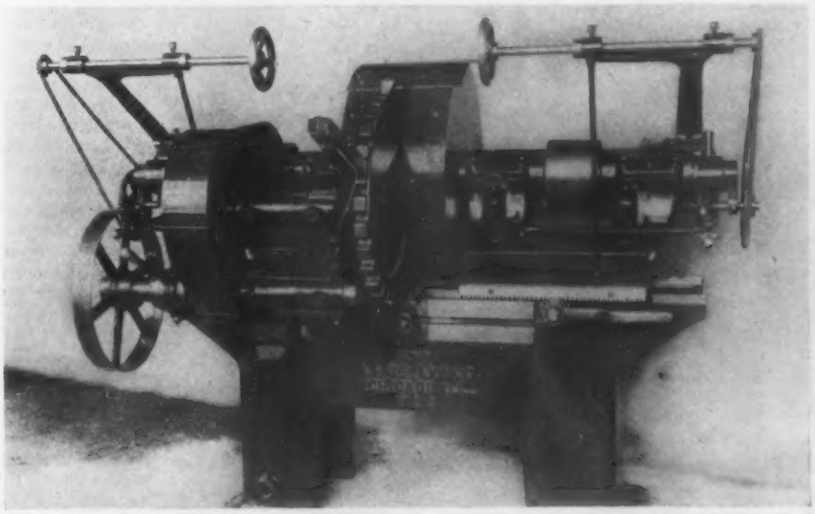
The proposition has already been accepted by some of the larger creditors, while others will give their answer at the meeting of Sept. 10. The list of creditors contains the names of various producers of pig iron, among them the Bethlehem Steel Co., Roane Iron Co., Pulaski Iron Co., Republic Iron & Steel Co., Youngstown Sheet & Tube Co., Algoma Steel Corporation, and the Low Moor Iron Co.

Semi-Automatic Machine for Grinding Ends of Coil Springs

A production of 3000 springs per hour is claimed for the dry ring-wheel grinder illustrated, which has been placed on the market by Charles H. Besly & Co., 118 North Clinton Street, Chicago.

The machine, which is designated as the No. 6—24 in.—I, is belt driven and is equipped with a rotary feeding device as shown, for grinding semi-automatically the ends of coil springs. The springs are 1¼ in. in diameter by 1⅜ in. long, and are of 3/16 in. steel spring wire. Approximately one-half of a coil is removed from each end of the spring. The springs are fed into a chute by the operator and are picked up by the rotary feeding wheel and carried between guides to the grinding wheels. They then go down between the abrasive wheels and drop out at the bottom into a receptacle, finish ground on both ends.

The rotary feeding wheel is fitted with removable hardened steel bushings. A backing bar or guide lined with heat-treated steel, machined to conform to the circumference of the rotary feeding wheel is mounted between the wheels to hold the work in place while grinding. The grinding wheels are not opened to permit the work to enter, but are locked in place, the only adjustment necessary being that made to compensate for wheel wear. The springs are compressed as they pass between the guides and the ends of the springs bear against the grinding wheels as soon as they are released from the guide.



Dry Ring-Wheel Grinding Machine Equipped With Rotary Feeding Device for Grinding Semi-Automatically the Ends of Coil Springs. The springs are of ⅛ in. steel wire and one-half of a coil is removed from each end in the grinding. They are fed into the chute by the operator and are picked up by the rotary feeding wheel, finally dropping out at the bottoms, finish ground on both ends. The production claimed is 3000 springs per hour

The bed of the machine is 68 in. long and 14 in. wide on the top. A pocket is cast in bed with an outlet at the rear for attaching an exhaust for removing the dust while grinding. Two Vee ways are machined on the top of the bed to receive the spindle bearing heads and the front side of the bed has a machined pad with a T-slot for attaching fixtures. A strip is also machined on the rear side for attaching a wheel truing device.

The two spindle-bearing heads, which are mounted on each end of the bed as shown, are 22½ in. long on the bed and 29¾ in. long at the top. The castings are box pattern and are secured to the machine bed with heavy anchor bolts engaging anchor castings under the head. The heads are adjustable along bed casting and are controlled by rack and pinion movement. One head is provided with an adjustable alining feature. The tops of the head castings are capped and bored to receive the bearing bushings. Large oil reservoirs are also a feature of the head castings.

The spindles are 2½ in. in diameter by 34⅛ in. long and run in phosphor-bronze ring oiling bearings. End thrust is taken on large-area self-oiling hardened steel thrust collars. The bronze bearings are 3½ in. outside diameter and slide endwise in the head castings ⅞ in. The outer end bearings have rack teeth which mesh into the pinions which control the endwise movement of spindle. The back thrust is taken on a ball thrust bearing fitted into the outer end of the rack bearing bushing. Wheel collars are shrunk on to the inner ends of the spindles. Each spindle is provided with a fine adjustment for taking up end play.

The spindle drive pulleys are 8½ in. in diameter and have 6¼ in. face. The spindles are held in position by pull springs, levers and pinions. Micrometer adjustment on each spindle is controlled from the operating side of machine through hand wheels, shafts and sprockets. The exhaust hood castings are attached to each head casting and are fitted with adjustable leaves. The feeding fixture is driven direct from the countershaft to the friction clutch pulley on fixture drive shaft from which the drive is through reduction gearing to the feed wheel shaft. The grinding wheels are of the ring type, the maximum size being 24 in. in diameter, 4 in. deep and having a 12 in. hole, and the minimum size having an 18 in. hole. The ring wheels are held in pressed steel chucks, which are equipped with a setting-out plate and steel clamping ring. The chucks are secured to wheel collars with hardened steel cap screws. A grease lubricated grinding wheel truing device is attached to rear of machine bed. This device has screw adjustment parallel with spindles and a detachable cover is provided in the exhaust hood for the entrance of the cutter bar between the wheels. A countershaft is part of the equipment of the machine.

Amalgamating Electric Appliance Companies

Negotiations are under way toward the organization of a new corporation to take over the Hurley Machine Co. and the Edison Electric Appliance Co., Chicago, and the Electric Vacuum Cleaner Co., Cleveland. In the new company the Hurley Machine Co. stockholders will have a large interest and the Hurley division of the business is to be conducted by the present management. The General Electric Co. controls the Edison Electric Appliance Co. and has a large minority interest in the other two companies. Whether the General Electric Co. obtains control of the new corporation will be determined by the division of the stock, which will be based on the value of the plants, equipment and earning power of each of the three companies. It is expected that the new organization will have $25,000,000 capital stock.

Revenue freight loaded in the week ended Aug. 16 amounted to 952,888 cars, the highest figure for any week in 1924. It compares with 1,039,938 cars in the corresponding week last year. Total for the year to date is 29,554,024 cars, compared with 30,993,391 cars last year.

LOCOMOTIVE ROD BORER

Heavy-Duty Duplex Unit Redesigned—Extended Cross Rail and Auxiliary Drop Table Available

The heavy duty duplex locomotive rod boring machine shown in the accompanying illustration, which is an improved unit developed by the Newton Machine Tool Works, has been placed on the market by the Consolidated Machine Tool Corporation of America, Wilmington, Del.

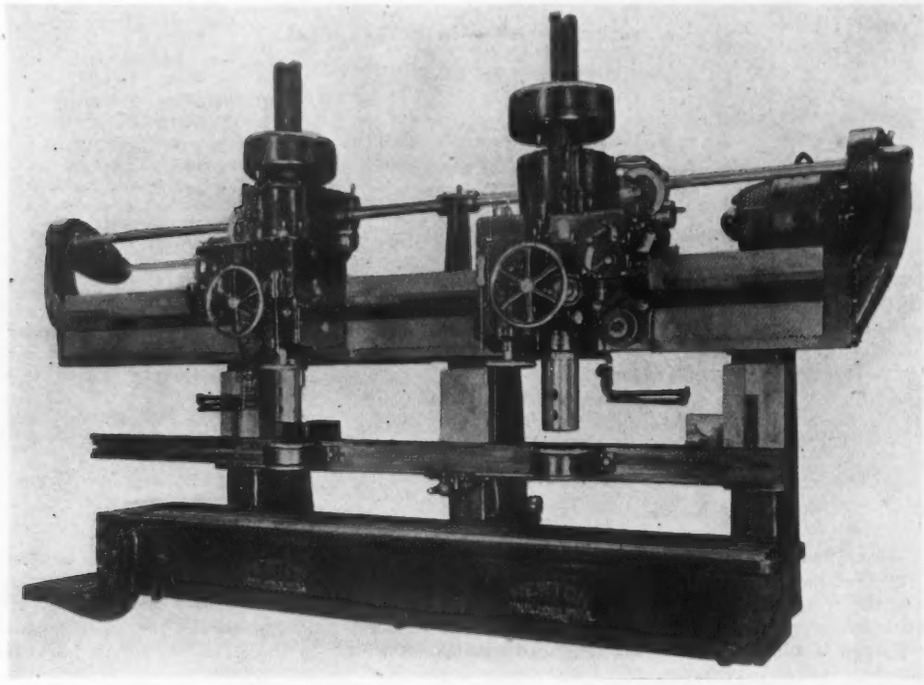
Although the standard machine is equipped with plain table, the machine is available also with an extended cross rail and auxiliary drop table at one end of the bed, as shown in the illustration. This table has a 4-in. in-and-out adjustment, which adapts the machine for the boring and reaming of the taper fit in cross heads. In the machine illustrated the intermediate support bearings are of special design; the standard supports are described below.

The spindles are machined from open-hearth hammered steel forgings, the end of the spindle being of increased diameter, which is 8½ in. and is fitted with No. 7 Morse taper hole with key-slot and drift slot, in addition to a face keyway for driving directly at the cutting point. It is counterbalanced by a ring counterweight suspended on chains. The spindle sleeves are machined from steel forgings, and fitted with bronze bushings and roller thrust bearings, and are provided with feed racks. Each spindle is operated independently, being driven by separate motor through back gears and bronze spiral gear ring which meshes with a hardened steel pinion. The bearings in the drive train are bronze-bushed; thrusts are taken up by roller bearings.

When the machine is arranged for constant-speed motor drive, 12 speed changes are provided by the use of a six-change gear box in conjunction with a two-speed spindle head. Six changes of feed are obtained with pick-off gears, additional feeds being obtainable by the use of extra pick-off gears. In addition to hand adjustment and power down feed to the spindle, power quick return is also provided through a metal cone friction, operated by the same lever that engages the feed and located on the front of the saddle.

The driving and feed gears are either of bronze or hardened steel, fully inclosed to run in oil. The spindle saddles are 35¼ in. long and each is independently adjustable for positioning by a large hand wheel through reduction gears, rack and pinion, at the front of the head. They are rigidly clamped to the cross rail by a special form of binding gib adjusted by three bolts from the front. Taper gibs are used to compensate for wear. A 1-in. pin extending 1 in. below the head, exactly central with the spindle on which is scribed a deep center line, facilitates adjustment of the heads to exact centers by the use of either fixed gages or trams, which are used for laying off the rods.

The cross rail is a one-piece box section casting and is bolted and dowelled to the three columns or uprights. Both an intermediate spindle support and a lower arbor support are included in the standard equipment, the intermediate spindle support being in the form of an angle plate, bolted and dowelled to the saddle and resting against the under side of the cross rail. When the spindle is positioned, it is clamped to the cross rail. A bearing having 8½ in. diameter holes in the bushing is bolted to this support and is adjustable vertically for varying heights of work. A slot is machined in the center of the table into which are fitted two bushings with 3 in. diameter holes. These bushings provide lower supports for the boring bars and they are adjustable for the full length of the table.



Improved Heavy-Duty Duplex Rod Boring Machine. The extended cross-rail and auxiliary drop table at the left-hand end of the bed are special equipment adapting the machine for the boring and reaming of the taper fit in crossheads. An intermediate spindle support and a lower arbor support are standard equipment. The intermediate support shown in the illustration is of special design for the Pennsylvania Railroad

An auxiliary work table to facilitate the reaming of cross heads, etc., is available. It is a one-piece casting, fitted to scraped bearings on the end of the base and has 4 in. adjustment at right angles to the direction of travel of the saddles, with provision for clamping in position.

When arranged for constant-speed motor drive, two 15-hp. 900-r.p.m. motors are required. They are mounted and bolted to pads on the rear of the gear boxes to which they are directly connected by gearing. When the machine is arranged for variable speed motor drive, two 15-hp. 400 to 1600-r.p.m. motors are required, which are mounted on the tops of the end columns and geared directly to the main drive shaft, eliminating the gear boxes.

Foundries and machine shops had fewer employees in July than in June, according to a report of the Bureau of Labor Statistics, Washington. Figures for 694 identical establishments showed a shrinkage of 4.5 per cent from 172,818 to 165,127 employees. The payroll fell off still more, from $4,866,710 for one week in June to $4,369,465 in July, a loss of 10.2 per cent. The reduction in average pay envelope was 6 per cent.

Partly Killed Simple Steels—I

Comparison with Killed and Effervescing Steels—Gas Holes and Their Effects—Advantages of Two Heatings and Rollings

BY HENRY D. HIBBARD*

IN order to write intelligently or read understandingly about steel, one must know what kind of steel it is that he writes or reads about and preferably how made. Otherwise the language used does not tell enough but leaves unsettled so many things that the reader, if a steel maker, needs to know, that the writings may be, as they often are, of small value to him.

Classifying Steels

Further, the steel or steels ought to be classified because many statements are true for only one kind. But what system of classification should be used? One may elect to classify his steels according to their compositions or physical properties, or he may classify them according to the processes by which they were made. A third method of classification which suits our present purpose better than the others is to divide steels into killed, partly killed, and effervescing. This may usually be done by whatever process the steel is made, excepting perhaps some abnormal heats or misfits. None of these methods is wholly satisfactory. No clearly defined lines of demarcation separate the different varieties from those which come next to them, or the products of the different processes from each other.

Killed and effervescing steels have received some attention from writers but not those partly killed which we have now to consider. We will include imperfectly effervescing steels for, by containing harmful gas holes, they resemble those partly killed. Both are, generally speaking, inferior to the best in quality. This article aims to fill a gap in steel literature. It is limited to the consideration of simple (so-called carbon) steels.

Partly Killed Steels Defined

Partly killed steel may be defined as that which contains harmful gas holes. Killed steel contains no gas holes whatever and full effervescing steel contains only such as are practically harmless. To understand fully partly killed steel and its production calls for much more knowledge of the gases occurring in iron and steel, solid and melted, than is now available. A steelmaker, unable to make his own investigations, may plod his weary way through voluminous papers about gases in steel only to find that the blurry conceptions he gets from them help him not at all to better his product in any manner that he did not know before, for though he does not know much of the composition of the gases he meets in steel, or what gas makes each different kind of gas hole, he can deal with them in a way. The first thing to be done in their study is to collect and analyze the gas in each of the different kinds of gas holes occurring in steel. This has never been done, or, if it has, the results have not been published.

The steels considered herein are mostly those made in the basic open-hearth furnace and top-cast in ordinary ingots of from one to three tons weight. Exceptions will be noted. Acid open-hearth steels are generally fully killed and when so made are outside our subject.

It is claimed, and with some reason, that the best steels made are either killed or fully effervescing. Nevertheless millions of tons of partly killed yet merchantable steel are made annually, though, from the standpoint of the best metallurgy, they are not to be recommended. This steel serves some purposes for which it does not have to be machined, or which do not require metal with clean surfaces free from imbedded scale or other defects, or in which the larger stresses which it must withstand in service are longitudinal in the piece of steel.

Factors in Killing Steel

The completeness with which steel (not effervescing) is killed depends,

(1) On the treatment it receives in the furnace during and after melting (chiefly the latter),

(2) On the casting temperature and

(3) On the additions made at the end, of reagents which prevent the separation of gases during solidification.

Specifically that means that the charge is melted with as little oxidation as practicable after which the molten charge is held boiling in the furnace at the proper temperature and without an undue excess of oxide of iron (ore) in the slag at the end so that the quantity of gases made or dissolved in the metal just before the final additions are made is as small as may be. Then those gases are kept in solution more or less completely according to the quantity of gas solvent—silicon or titanium or aluminum, some or all, added at the end.

Killed and settling steel should always be cast in molds with the larger end up to minimize pipe. Partly killed steels which do not settle, and effervescing steels may be cast into ingots, small end up, as there will be little or no pipe because of the gas holes formed in them.

Kinds of Partly Killed Steels

In this article partly killed steels are divided into soft steels having less than 0.40 per cent of carbon, medium steels with from 0.40 to 0.70 per cent, and hard steels containing over 0.70 per cent. They may either, (1) rise, or (2) stand, or (3) even settle somewhat in the mold according as they are less or more nearly killed. According as they act in these different ways they will be separately dealt with. Many of the considerations of medium carbon steels apply also to certain steels, not effervescing, having less than 0.40 per cent carbon down to a content of about 0.25 per cent.

Rising Steel Caused by Gases

Rising of steel in the molds is caused by gases which are liberated from and retained in the mass of cooling and freezing metal. The bubbles they form displace their volume of metal and as a consequence the steel rises. The collective volume of the bubbles or gas holes is, generally speaking, greater than that of the pipe which would be formed if the steel were to be killed. Some slightly rising steels do, however, have also a diminished pipe cavity. When the steel is cast too hot the quantity of gases it contains is unduly great and their tendency to form holes is too great likewise, unless the quantity of gas-solvents added is proportionately great.

Kinds of Gas Holes

The gas holes may be classified as either skin, intermediate, or central holes. Skin holes are the most harmful ones and are located in the skin of the ingot. They are elongated holes situated with their longer axes perpendicular to the ingot surface, are usually between 1/16 in. and ¼ in. in diameter, and between ¼ in. and 2 in. long. They may be exposed in the ingot by planing off the skin metal to a depth of about ⅛ in.

An easier way to find them, however, is to heat the

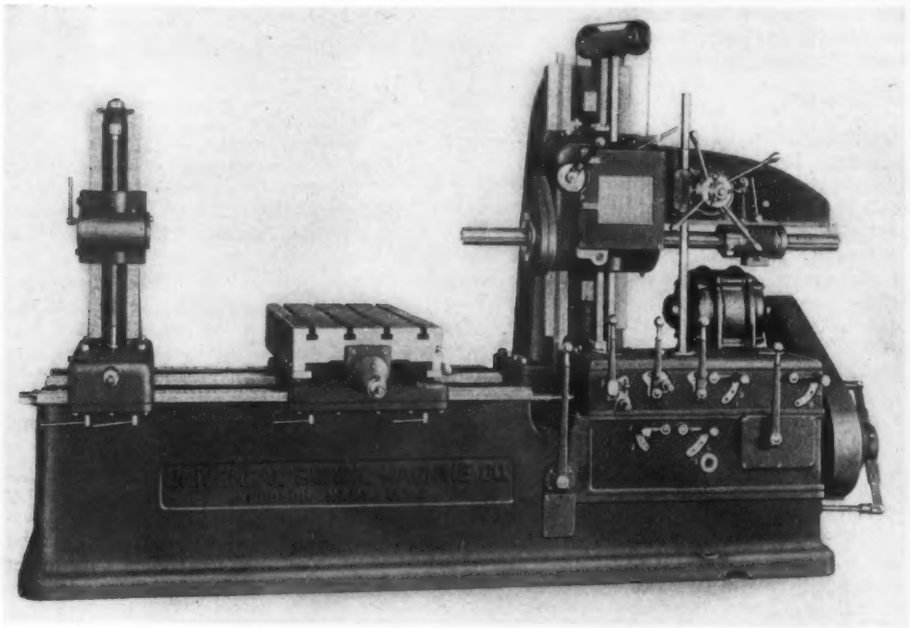
(*Continued on page* 599)

*Consulting metallurgist, Plainfield, N. J.

Horizontal Boring Machine

Developed from the 4½-in. Tri-Way machine, which has been on the market for the past three years and was described in THE IRON AGE of Dec. 29, 1921, a new 2½-in. machine is now being placed on the market by the Universal Boring Machine Co., Hudson, Mass. It embodies a number of new features as compared with the older and larger machine, particularly in connection with ease and convenience of control.

As with the 4½-in. machine, this has the three flat ways on its wide bed and both the back head and the carriage are arranged for definite alinement with regard to the ways. The front and center ways are the guiding surfaces, while the back way further supports the carriage and table. The bed is rectangular and heavily ribbed and braced to avoid any spring, regardless of the character of foundation.



Ease and Convenience of Control Feature the 2½-In. Size. Absence of overhang, convenient location of the feed and speed plate and an unusually wide range of speeds are notable. At the full speed of 650 r.p.m., with the machine unloaded, a distinct hum is audible

Overhang on the table is practically eliminated, As a matter of fact, except for the pulleys and belts at the right and their gear from the motor to the main drive, there is no overhang. Of course, at some positions of the table this statement does not hold true, but for its center position it does.

The starting and stopping lever, located for the operator's right hand, is immediately to the right of the carriage. In emergency, he can stop the machine by operating this lever with his knee or elbow. Four other levers take care of special requirements in connection with operation. The first of the three in the upper box is the selective feed lever, which is used for elevating the head, running the table across the machine and feeding the carriage. The second lever takes care of the extent of the feed and when pushed to the right gives a rapid traverse. The third is the reversing lever for all feeds—that is, reversing the direction of feed. This handles direction for the head, the bar, the table and the carriage.

It will be noted that the feed and speed plate is placed on the bar head within easy view, and where it cannot be covered as when placed horizontally. This makes it much easier for a new man to handle the machine. Below the three levers just described are change gear levers which are worked in combinations to such effect that the spindle speeds may be adjusted from about 16 to 650 r.p.m. with a total of 12 speeds. Similarly, the feeds in either direction are from 1 to 12 in. per min., with nine different feeds. In the same way, the boring feeds may be adjusted from 0.03 to 4.8 in. per min., again in 9 gradations.

There are two separate oiling systems, one for the gearing in the gear boxes noted at the right of the machine, while the other is in the main head. In both places the moving parts are kept thoroughly lubricated, the gear case being by the splash system. Both boxes are doweled into place. All bearings subjected to thrust are fitted with SKF ball-bearing sets.

Locking arrangements are provided for the bar, the table, the carriage, the head, and the back column. This latter has its head gear in unison with the main head so that the two are in alinement at all times. Making use of the various possibilities of the machine, however, with regard to the movements of the various elements and the locking devices, this boring machine may be used also as a milling machine, as a planer or shaper, and even as a lathe or outside turning machine. In one case where a similar machine was used in this latter manner to turn car wheels, the wheels were mounted on the bar and the cutting tool was mounted on the table of the machine.

Among the specifications of the machine: The travel of the main boring bar is 20 in., which by resetting can be extended to 36 in. The overall size of the table is 20 x 42 in., with power cross feed for 32 in. The power longitudinal feed to the carriage is 24 in., while the vertical feed to the head is 20 in. The maximum distance between the table and the center of the bar is 21½ in., while the greatest distance from the face plate to outer support is 48 in. The machine is driven by a 5-hp. motor, tests having demonstrated that the standard 3½-hp. motor has not the ability to work the machine up to its capacity. The size of the bed overall is 34 x 106 in., while the shipping weight crated is about 10,500 lb. Boxed for export, this weight becomes 11,750 lb.

Reprints of the paper, "Heat Losses Through Insulating Materials," presented at the Cleveland meeting of the American Society of Mechanical Engineers by R. H. Heilman, have been issued by Philip Carey Co., Lockland, Cincinnati. This covers ten pages of text, diagrams and tables, and is an accompanying paper to three bulletins previously issued by that company and covering respectively high temperature heat insulation, heat losses from bare iron surfaces, and heat transmission tests.

The Machinery Club of Chicago will hold a barbecue at Thatcher's Woods, River Forest, Ill., Saturday, Sept. 6.

MODERNIZES MALLEABLE PLANT

Old Concern Brings Equipment Up to Date During Period of Business Dullness

In 1867 the Rhode Island Malleable Iron Works started on a small scale at Hillsgrove, R. I. In later years, as business demanded, numerous additions and changes in the original plant were made haphazardly, but in the past ten years a series of systematic changes were inaugurated to keep stride with advances made in malleable manufacture, and with the desire of the management to have the plant up to date. During the past year or two the largest and most modern changes were made since the plant was established.

Since foundry materials, in general, are heavy and expensive to handle, special study has been given the handling of these materials to insure the most economical methods. Storage buildings containing spacious compartments have been erected very close to both sides of the railroad siding, thus enabling ready unloading directly into the buildings, with the least possible amount of handling for brick, sand, clay, etc. Pig iron is unloaded and systematically piled on one side of a spur track in the yard. On the other side of this same spur track and parallel to it a concrete walled runway enables a steam crane with grab bucket to empty coal cars, piling the coal in large quantities. Deliveries of these materials to the foundry buildings are made by dump body gasoline tractors.

Fireproof Pattern Storage

After fire experience all patterns now are stored in a recently constructed fireproof building of concrete and steel, with steel shelves, and are protected by an automatic sprinkler system. The pattern department, which does all the metal and wood pattern work, was enlarged by additions to the building to include the carpenter shop and a well-equipped brass shop.

The core shop adjoining the pattern storage was enlarged to facilitate the installation of drawer-type baking ovens using oil as fuel. Preparation of sand for core work is done by machinery at the other end of the building, partitions dividing the end additions, assuring a light, clean and airy department for the core workers.

Rearrangement of Molding Floors

To reduce accidents in the molding department an elaborate rearrangement of the entire No. 1 foundry was made, thus obtaining an 8-ft. gangway along the center of shop, which is 88 ft. wide x 273 ft. long, and giving floors 11½ ft. x 40 ft. There has been a considerable decrease in accidents since this change was made, as well as an improvement in both working conditions and production.

No. 2 foundry, considered by the present management as a relic of former days, has been demolished, and a new 122 ft. x 140 ft. building designed by Frank D. Chase, Inc., Chicago, is being erected at a cost of $75,000. To contain 22 molding floors 12 ft. x 40 ft., this building will consist of a concrete curtain wall 5 ft. 10½ in. high, surmounted by fabricated steel construction. To insure good light and ventilation numerous windows are being placed in the walls and plenty of sash in the roof, which will be of Pond construction. There will be sufficiently wide gangways to promote safety for men carrying ladles of hot metal. The two foundries will be connected by a passage and the monorail system for carrying bull ladles is being extended, to improve production facilities.

Annealing Department Remodeled

To keep pace with the rest of the plant the annealing department is being remodeled. The building housing this department, constructed only a few years ago, is of brick, with ample floor space for handling the many stacks of pots and castings. It is paved with creosoted wood blocks, which have been found satisfactory for the hard usage given this floor. A recently installed electric lift for the handling of annealing pots is working out advantageously. All the old type underground flue annealing ovens are gradually being replaced in a new layout by side-wall flue, modernly insulated, coal fired, 25-ton Touceda type ovens. The third of the series was tried out recently with satisfactory results. It is contemplated to add two more in the near future.

To insure fire protection for the improved works a 75,000 gal. water tower has been erected, and sprinklers placed generously throughout the plant. Charles Brown is president and Harry L. Steeves vice-president and assistant general manager of the company.

Study of Bit Steel Used in Oil Drilling

A study of the efficiency of drill bits and steel parts in general as affected by oil field conditions has been undertaken by the Department of the Interior. A metallurgist attached to the petroleum experiment station of the Bureau of Mines, Bartlesville, Okla., has been placed in the field to conduct the investigation. A study of time lost due to wear and breakage of steel components is also to be made. Figures obtained by the Bureau of Mines from a company which has conducted a complete time-lost study of oil-well drilling in six of its wells in Oklahoma show that in rotary drilling only 31.2 to 36.54 per cent of the total time to bring in a well was spent in actual drilling and that 21.5 to 29.3 per cent of the total time, amounting in one instance to 250 hr. was spent in pulling out and running in to change bits. In cable tool drilling 37.4 to 54.13 per cent of the total time was spent in actually drilling and only 1.49 to 2.94 per cent was spent in changing dull bits. It is thought that much time spent in changing bits on rotary rigs may be saved by increasing the footage obtained per bit and that the speed of drilling may be increased in both methods of drilling. The figures given are from the logs of only three rotary and three cable tool drilling wells, but it is hoped that with the aid of operators and contractors more extensive data from this and other fields can be obtained which will be of aid to well drillers generally. At present work is under way in the Tonkawa and Burbank oil fields, but the work will not be confined to this one locality.

Big "Spring Balance" for Testing Test Machines

A spring balance in which the spring consists of a solid metal bar over an inch in diameter is used by the Bureau of Standards as an aid in calibrating testing machines. This bar is tested under various loads up to 100,000 lb. and its change in length for each load is measured with an extensometer. It can then be put into a testing machine, and by noting the readings of the extensometer the force being applied by the machine can be measured and compared with the machine's own readings, in much the same way as the accuracy of a scale is checked with standard weights.

The balance for testing this calibration bar consists of a lever resting on the top of a short column and having a pan at its long end into which weights up to a total of 35,000 lb. can be put. The calibration bar is attached at the short end, and the ratio of the lever arms is such that loads up to 100,000 lb. can be applied to the bar.

One of the most important pieces of standardization work, from the point of view of the furtherance of mass production, is that of standardization of limit gaging methods. The sectional committee, under the sponsorship of the American Society of Mechanical Engineers, on the standardization of plain limit gages for general engineering work, will soon publish the first of its three reports, entitled "Tolerances and Allowances for Machine Fits in Interchangeable Manufacture." The other two will cover "Methods of Gaging" and "Standardization of Gages." This first report will contain fundamentals, definitions, a classification of fits, explanatory notes and formulæ for recommended allowances and tolerances.

Iron and Steel Exports Lower in July

Smallest Total, with Two Exceptions, in Seventeen Months —Imports the Smallest Since January

WASHINGTON, Aug. 28.—Recording a decrease of 26,289 tons, American exports of iron and steel products in July aggregated 137,481 tons, valued at $15,462,549. This may be compared with June exports of 163,770 tons, valued at $18,161,669. For the seven months ended July 31 exports totaled 1,121,340 tons, a slight decrease from the 1,141,569 tons for the first seven months of 1923.

Imports of iron and steel in July were only 30,410 tons, compared with 60,569 tons in June and with 53,464 tons in July of last year. The July imports were valued at $2,146,276, compared with $2,720,561 in June.

Exports of Iron and Steel

(In Gross Tons)

	July		Seven Months Ended July	
	1923	1924	1923	1924
Pig Iron	2,966	1,796	17,811	24,919
Ferromanganese	4	102	3,220	3,143
Ferrosilicon	82	0	573	708
Scrap	4,598	9,818	25,871	80,370
Ingots, blooms, billets, sheet bar, skelp	6,480	9,568	69,917	48,945
Wire rods	1,877	795	18,127	12,571
Iron bars	716	435	9,918	3,731
Steel bars	14,531	6,567	98,499	65,123
Alloy steel bars	635	65	1,549	1,703
Plates, iron and steel	8,599	3,948	75,266	56,640
Sheets, galvanized	9,454	8,052	76,949	59,928
Sheets, black steel	7,471	4,867	63,407	88,505
Sheets, black iron	1,274	907	8,876	6,241
Hoops, bands, strip steel	2,695	2,423	23,391	22,296
Tin plate, terne plate, etc.	13,029	7,817	65,335	106,152
Structural shapes, plain material	10,861	17,900	76,861	64,874
Structural material, fabricated	7,014	5,418	42,351	42,253
Steel rails	24,521	17,619	142,332	121,224
Rail fastenings, switches, frogs, etc.	4,836	2,666	22,986	22,834
Boiler tubes, welded pipe and fittings	17,671	15,960	108,609	136,429
Cast iron pipe and fittings	2,317	2,332	15,411	16,292
Plain wire	7,117	2,056	57,516	26,646
Barbed wire and woven wire fencing	8,384	9,107	49,878	51,383
Wire cloth and screening	188	164	863	1,123
Wire rope and cable	550	347	4,037	2,394
Wire nails	3,780	1,122	22,870	17,392
All other nails and tacks	619	545	5,354	4,427
Horseshoes	83	71	547	612
Bolts, nuts, rivets and washers, except track	1,719	1,598	11,053	9,816
Car wheels and axles	2,815	2,192	11,464	12,402
Iron castings	1,000	829	6,033	5,310
Steel castings	426	315	2,829	3,910
Forgings	246	80	1,866	1,044
Total	168,558	137,481	1,141,569	1,121,340

For the seven months ended July 31 imports aggregated 319,099 tons, or somewhat more than half those of the seven months of last year, which amounted to 569,287 tons.

Imports of iron ore in July were 223,480 tons, compared with 158,284 tons in June and with 439,367 tons in July of last year. For the seven months the iron ore imports of 1,144,148 tons were less than two-thirds the figure of last year, which was 1,767,858 tons in seven months. Iron ore imports in July were furnished mainly from Chile, with 149,200 tons, or more than two-thirds the total. For the seven months, also, Chile predominated, with 652,000 tons, or nearly 60 per cent of the total from all countries.

Among the export items in July structural shapes, rails and welded pipe and tubes were the largest items, in the order named. Except for structural shapes, however, these all showed a falling off from the previous year. The principal gains over the previous year were in scrap, which was more than double, and in ingots, blooms, billets, etc., which advanced nearly 50 per cent. Among the principal losses were steel bars, plates, wire and nails, all of which fell off more than one-half, while tin plate lost 40 per cent, and sheets lost 35 per cent.

With few exceptions the falling off of imports covered the entire list. Notable among these exceptions, the imports of rails, of structural shapes and of tubular products were more than double the figures of last year. These three items, with the exception of pig iron, were the largest import items in July. The large falling off in tonnage, however, occurred in pig iron, with a loss of 6249 tons, ferromanganese, with a loss of 10,422 tons, and scrap, with a loss of 13,178 tons. In ferromanganese and scrap the imports in July this year were only 8 per cent of those of last year.

Of the pig iron imported in July, 7414 tons came from British India, 3427 tons from Holland and 1125 tons from Great Britain. Of the structural shapes, 3628 tons, or nearly three-fourths, came from Belgium; France furnished 627 tons, Great Britain 493 tons and Germany 218 tons. Among the tubular products, France with 1843 tons and Belgium with 1780 tons provided between them nearly 90 per cent of the total. Germany sent 213 tons and Great Britain 154 tons.

Surveying the seven-month period in exports, the chief increases were in scrap, from 25,871 tons to 80,370 tons; in tin plate, from 65,335 tons to 106,152 tons; in boiler tube and welded pipe, from 108,609 tons to 136,429 tons, and in black steel sheets from 63,407 tons to 88,505 tons. There was also an expansion in pig iron exports, from 17,811 tons to 24,919 tons. Chief among the losses in export tonnage were steel bars, which fell from 98,499 tons to 65,123 tons; plain wire, which dropped from 57,516 tons to 26,646 tons; rails, which fell from 142,332 tons to 121,224 tons; iron and steel plates, from 75,266 tons to 56,640 tons; galvanized

Monthly Exports, January, 1923, to July, 1924

(In Gross Tons)

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914	2,406,218	221,582	145,720
*Average, 1915 to 1918	5,295,333	438,462	1,468,026
Calendar year 1919	4,239,837	309,682	258,907
Fiscal year 1920	4,212,732	248,126	288,766
Calendar year 1920	4,961,851	217,958	216,873
Fiscal year 1921	4,168,619	129,541	82,549
Calendar year 1921	2,213,042	28,305	10,363
Fiscal year 1922	1,721,418	28,330	63,127
Calendar year 1922	1,986,297	30,922	107,201
January, 1923	123,190	2,482	12,253
February	133,902	2,786	9,357
March	163,920	2,881	14,066
April	177,471	1,844	14,863
May	203,389	1,848	16,859
June	171,183	2,960	12,278
Fiscal year 1923	1,816,329	31,891	137,757
July	168,558	2,966	8,357
August	161,426	3,117	11,232
September	172,499	2,148	12,610
Ocotber	152,511	3,294	13,442
November	186,956	3,198	16,347
December	177,844	2,750	11,073
Calendar year 1923	1,992,595	32,318	152,748
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924	2,009,343	40,596	119,744
July	137,481	1,796	10,363
Seven months	1,121,340	24,919	61,516

*Calendar years.

Imports of Iron and Steel Into the United States
(In Gross Tons)

	July		Seven Months Ended July	
	1923	1924	1923	1924
Pig iron	19,760	13,511	313,900	127,587
Ferromanganese	11,314	892	58,049	20,609
Ferrosilicon	1,067	543	8,422	7,869
Scrap	14,216	1,038	130,862	30,693
Steel ingots, blooms, billets, slabs and steel bars	1,097	1,195	9,044	23,172
Rails and splice bars	1,126	2,272	15,650	23,141
Structural shapes	2,091	4,977	6,074	23,441
Boiler and other plates	2	75	484	2,671
Sheets and saw plates	224	83	932	1,378
Bar iron	759	583	5,063	2,916
Tubular products	529	4,208	2,742	35,253
Castings and forgings	380	171	1,796	1,784
Nails and screws	72	30	776	274
Tinplate	92	56	9,471	906
Bolts, nuts, rivets and washers	6	4	128	102
Wire rods	148	146	2,135	4,730
Round iron and steel wire	312	314	2,550	2,282
Flat wire and strip steel	224	122	755	1,333
Wire rope and insulated wire, all kinds	45	190	454	8,958
Total	53,464	30,410	569,287	319,099
Manganese ore	23,824	12,287	104,212	182,199
Iron ore	439,367	223,480	1,767,858	1,144,148
Magnesite	5,666	2,237	59,367	47,120

sheets, from 76,949 tons to 59,928 tons, and semi-finished material, from 88,044 tons to 61,516 tons.

Similarly for imports, spectacular increases were made in structural shapes, which advanced from 6074 tons to 23,441 tons, and in tubular products, which increased thirteen-fold from 2742 tons to 35,253 tons. Rails and splice bars advanced from 15,650 tons to 23,141 tons, while ingots, blooms, billets, slabs and bars increased from 9044 tons to 23,172 tons. Principal among the decreases were pig iron, which was more than halved; ferromanganese, which fell to a little more than one-third last year's total, and scrap, which dropped to less than one-quarter the figure for last year. The drop in pig iron and scrap, aggregating 286,478 tons, accounted for more than the total reduction for the imports in the two periods. Eliminating these two items, the movement as a whole showed an increase, in spite of the loss of more than 37,000 tons in ferromanganese imports. Among the smaller items of increases, wire rope and insulated wire stands out, jumping from 454 tons to almost 9000 tons.

Sources of American Imports of Iron Ore
(In Gross Tons)

	July		Seven Months Ended July	
	1923	1924	1923	1924
Spain	56,291	7,550	184,000	32,654
Sweden	145,508	34,883	546,559	125,266
Canada	9,472	357	23,010	1,397
Cuba	96,500	15,200	430,351	200,190
French Africa	80,058	13,662	223,829	106,782
Chile	40,000	149,200	317,700	652,000
All others	11,538	2,628	42,409	25,859
Total	439,367	223,480	1,767,858	1,144,148

Imports of Iron and Steel in Gross Tons
(Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
1909 to 1913, incl	26,505	†14,132	....	....
1914 to 1918, incl	23,351	4,645	3,281	‡47,155
1919 to 1921, incl	23,901	5,708	3,710	37,115
1922	59,545	31,954	9,117	31,204
January, 1923	120,078	83,935	5,120	829
February	67,704	35,793	9,234	4,636
March	106,197	72,344	9,030	12,799
April	77,903	36,371	7,221	14,071
May	75,883	39,764	10,482	12,734
June	68,019	30,033	12,794	36,138
Six months' average	85,964	49,706	8,980	13,535
July	53,464	19,760	12,381	23,824
August	45,439	14,564	7,334	23,026
September	36,611	8,353	9,744	35,175
October	29,882	9,349	9,372	16,842
November	26,364	9,299	5,073	14,790
December	27,009	12,355	2,307	12,003
Twelve months' average	61,217	30,652	8,343	17,171
January, 1924	26,675	10,587	3,033	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,067
April	50,969	17,171	7,371	29,729
May	66,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
Twelve months' average	42,115	15,643	6,105	28,807
July	30,410	13,511	1,435	12,287
Seven months' average	45,586	18,227	4,068	26,028

*Not included in "total imports."
†Included ferroalloys.
‡Average for three years, 1916 to 1918 only.

Ten Years of Labor and Wages

Figures of the National Industrial Conference Board show that in 23 leading manufacturing industries, with 700,000 employees, wages in the summer of 1924 are 127.3 per cent higher than in the summer of 1914. Among the increases in hourly wages may be noted 122 per cent in the automobile industry, 141 per cent in iron and steel, 125 per cent in boots and shoes, 158 per cent in rubber goods and 166 per cent in cotton mills in Northern States. Similar increases are shown of 191 per cent in anthracite coal mining, 135 per cent in railroads, 108 per cent in the building trades, without counting any of the prevailing bonuses, and 89 per cent in agriculture. Building and mining industries are above the high peak of 1920; all others are below.

Employment in identical manufacturing plants advanced 12 per cent during the ten years, in spite of the fact that employment this summer was 25 per cent below the high figure of 1920. The average full time work week has decreased from 55 to 49.9 hr., while the average week actually worked has decreased from 51.4 to 45.4 hr. In spite of a much higher cost of living than in 1914, the average wage earner covered in the survey is 27 per cent better off today than he was ten years ago; that is, his present wages will buy 27 per cent more than he could buy in 1914 with his wages at that time.

Malleable Castings in July

Malleable castings produced by 128 plants in July amounted to 30,820 tons, by far the smallest tonnage for any month in more than a year. The figure compares with 33,876 tons in June, with 57,881 tons in July of last year and with 72,807 tons in March of this year —the maximum month of the past twelve. Production in July was 28.5 per cent of the capacity in operation, compared with 31.2 per cent in June and with 66.5 per cent as recently as last March.

Comparing 109 identical plants, three of which were reported idle during the past four months, July production was 27,061 tons, or 28.9 per cent of capacity. Shipments were 31,464 tons, and orders booked during the month were 26,908 tons. Both production and shipments were the lowest for any month in the last year, while orders were lower than any other month, except May and June.

Cast Iron Pipe and Fittings

Census Bureau reports on manufactures in 1923 show that 74 establishments making cast iron pipe and fittings produced goods to the value of $92,674,088, compared with $44,321,548 in 1921, a gain of 109.1 per cent. There were 21,576 wage earners against 12,496. Wages amounted to $25,019,953, against $13,135,992. The value added by manufacture amounted to $43,869,663, against $20,424,528, a gain of 114.8 per cent. The horsepower used in 1923 was 47,239 and 170,497 net tons of coal was consumed.

Of the 74 establishments nearly one-half (33) were located in Alabama, nine in New Jersey, nine in Pennsylvania and the remaining 23 in ten other States.

The Cleveland Punch & Shear Works Co., Cleveland, has developed a complete line of power presses for stamping and drawing work and is starting to place these on the market as an addition to its present line of punching and shearing machinery. The presses will be made in various types and in sizes of from one to 100-ton capacity.

European Conditions Slowly Mending

British Prices Expected to Rise as Demand Materializes —Ferromanganese Under Fire—Continental Conditions Spotty

(By Cable)

LONDON, ENGLAND, Sept. 2.

PIG iron and steel position is unchanged. Home and export business is still sluggish and prices are weak, but there is some export inquiry. Any substantial demand is fully expected to advance prices, owing to high costs, but consumers still are reluctant. There is rather more general confidence on the agreement on the reparations problem but the outlook still is uncertain.

Hematite is dull and easier. Gjers, Mills & Co., Ltd., Middlesbrough, have blown out one furnace.

Ferromanganese is subject to keen Norwegian and other Continental competition. Makers are cutting prices to secure orders. Prices consequently are quite nominal.

Finished steel is dull and prices for quotation are unaltered, but ship plates have been sold below £9 2s. 6d. (1.83c. per lb.) f.o.b. The absence of substantial demand makes it difficult to name exact prices.

Clyde shipbuilding output for August was 15 vessels launched, aggregating 48,683 tons gross register, including one ocean liner of 20,000 tons.

Russia has awarded the British Mannesmann Tube Co., Ltd., a contract involving two months' work. The Barrow Hematite Steel Co., Ltd., Barrow-in-Furness, has been closed, owing to reaching the end of its rolling program and with no fresh orders received. Bolckow, Vaughan & Co., Ltd., Middlesbrough, are calling up the remainder of the unpaid share capital stock. Shares with 12s. paid call for 4s. due at the end of September and 4s. at the end of December, making £1 fully paid.

Sheets and Tin Plate

Tin plate is quiet, without much sign of a revival yet, though improved Continental demand is anticipated, with the ratification of the London pact. The Far East is purchasing good quantities of 20 x 14's, lights and wasters.

Galvanized sheets are strong and an upward tendency is anticipated with the Indian revival [of demand]. Makers are well sold. It is reported that American mills secured the big Argentine Government order for 36,000 tons, to be used for handling oil employed in the destruction of insects.

Black sheets are in good demand by the Far East. Japan specifications 6 x 3 ft., 13's, have been advanced by 10s. to £18 10s. (3.70c. per lb.) for 107 lb. and £18 5s. (3.65c. per lb.) for 112 lb. Other markets are quiet.

On the European Continent

Continental business is dull, owing to uncertainties as to prices, but here and there sales are being effected, including 10,000 tons of sheet bar sold at £6 ($26.88) c.i.f. Wales. German merchant bars are being sold at £6 1s. (1.21c. per lb.).

Political circles here are talking of the possibilities of an iron and steel tariff.

In France the Compagnie des Forges et Acieries de la Marine et d'Homecourt has blown out a blast furnace.

In Germany the Stahlwerke Buderus-Roechling, A. G., at Volklingen, has announced a shutdown for Sept. 15, entailing the discharge of 6000 men. The Wilhelmshütte Works at Saalfeld is working only three days per week.

GERMANY SHOWS IMPROVEMENT

General Revival Expected as Result of Reparations Settlement

(By Cablegram)

BERLIN, GERMANY, Sept. 2.—A general revival of the steel industry is expected as a result of the settle-

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.48 per £1, as follows:

Durham coke, del'd	£1	6s.				$5.82		
Bilbao Rubio ore†	1	4				5.37		
Cleveland No. 1 fdy.	4	8½				19.83		
Cleveland No. 3 fdy.	4	3	to £4	3½s.		18.59	to	$18.70
Cleveland No. 4 fdy.	4	2½				18.48		
Cleveland No. 4 forge	4	1½				18.26		
Cleveland basic	4	2½				18.48		
East Coast mixed	4	12				20.61		
East Coast hematite	4	19	to 5	0		22.18	to	22.40
(a) Ferromanganese	13	0	to 13	10		58.24	to	60.48
Rails, 60 lb. and up	8	5	to 9	0		36.96	to	40.32
Billets	7	10	to 8	5		33.60	to	36.96
Sheet and tin plate bars, Welsh	8	9				37.86		
Tin plates, base box	1	3	to 1	3¼		5.15	to	5.18
						C. per Lb.		
Ship plates	9	5	to 9	15		1.85	to	1.95
Boiler plates	13	0	to 13	10		2.60	to	2.70
Tees	9	7½	to 9	17½		1.88	to	1.98
Channels	8	12½	to 9	2½		1.73	to	1.83
Beams	8	7½	to 8	17½		1.68	to	1.78
Round bars, ¾ to 3 in.	9	12½	to 10	2½		1.93	to	2.03
Galv. sheets, 24 gage	18	5	to 18	10		3.65	to	3.70
Black sheets, 24 gage	13	0	to 13	5		2.60	to	2.65
Black sheets, Japanese specifications	15	5				3.05		
Steel hoops	10	15	and 12	10*		2.15	and	2.50*
Cold rolled steel strip, 20 gage	17	0				3.40		

*Export price.
†Ex-ship, Tees, nominal.
(a) Nominal. Export price, figured back from price landed, duty paid, in United States, about $55, or £12 5s.

Continental Prices, All F. O. B. Channel Ports

(Nominal)

Foundry pig iron:							
Belgium	£3	18s.	to £4	0s.	$17.47	to	$17.92
France	3	18	to 4	0	17.47	to	17.92
Luxemburg	3	18	to 4	0	17.47	to	17.92
Billets:							
Belgium	5	12½			25.20		
France	5	12½			25.20		
Merchant bars:					C. per Lb.		
Belgium	6	2½			1.23		
Luxemburg	6	2½			1.23		
France	6	2½			1.23		
Joists (beams):							
Belgium	6	0			1.20		
Luxemburg	6	0			1.20		
France	6	0			1.20		
Angles:							
Belgium	8	0	to 8	5	1.60	to	1.65
⅛-in. plates:							
Belgium	7	10			1.50		
Germany	7	10			1.50		
¼-in. plates:							
Luxemburg	7	10			1.50		
Belgium	7	10			1.50		

ment of the reparations question. The market is increasingly active and prices are tending slightly upward. There has been increased buying of ingots, bars, sheets and rolled goods generally.

The pig iron market is dull but impending improvement is indicated by a big demand for scrap, accompanied by rising prices. The Solingen steel industries report improvement.

July returns of foreign trade show a marked increase in exports of rolled goods and a 25 per cent increase in exports of machinery, both in comparison with June. The Stinnes industrial group has acquired control of the Berlin Aktiengesellschaft für Automobilbau.

BELGIUM AND REPARATIONS

Iron and Steel Market Faces Heavy German Competition Under Dawes Plan

BERLIN, GERMANY, Aug. 18.—German competition in steel and iron of late has been felt increasingly by Belgium. The Belgian industrial press raises the still unsettled question of principle—whether the execution of the Dawes reparations scheme will (1) by means of the burdens involved increase German production costs and render competition difficult, or (2) keep down wages and profits, as the only means of creating the necessary export surplus, and so make competition more severe. For Belgium this is a vital question, she being, in proportion to population, the biggest reparations claimant, and at the same time the first country which has more than restored her heavy-industry production to pre-war level. Already in 1923 coal production slightly exceeded that of 1913, while pig iron production reached 88.6 per cent; and in January, 1924, coal production exceeded by 14.66 per cent the average monthly production of 1913 and coke production by 28 per cent. In the first half of 1924 the production of pig iron and steel was above pre-war level, and far above the level of the same half of 1923.

Per capita productivity in coal mining has considerably increased as compared with the first post-war years, but is behind that of 1913, and in this year has shown a further slight decline. The number of employees in the coal and coke branches at end of June was 170,040, against 146,084 in 1913. Coal production in the first half of 1924 was 12,197,000 metric tons, against 11,127,000 tons in the same half of 1923. In every month except June production exceeded the monthly average of 1913. Coke production totaled 2,149,000 tons, against 1,966,000 tons in the first half of 1923.

The iron and steel markets of late have been weak. Pig iron producers, unwilling to sell at a loss, attempted to keep prices up, but without success. Foundry iron No. 3, which started July at fr. 390 to 395 per metric ton ($17.83 to $18.06 per gross ton, at 4.5c. per fr.) fell by the end of the month to fr. 375 to 380 ($17.91 to $18.15, at 4.7c. per fr.), and the tendency is still downward. Luxemburg foundry iron No. 3 fell in the same time from fr. 395 to 400 ($18.06 to $18.29) to fr. 375 to 380 ($17.91 to $18.15). The movement for Belgian semi-finished materials was:

	Fr.		Fr.	
Blooms	520 to 530	$23.77 to $24.23	490 to 495	$23.40 to $23.64
Billets	560 to 570	25.60 to 26.06	525 to 530	25.07 to 25.31
Slabs	580 to 600	26.52 to 27.43	550 to 560	26.26 to 26.74

Luxemburg rates, which started a little higher, fell to the same level. In rolled material little business was done. The market for tubes is weak, with prices falling, and little business is done in scrap. The export price for bars fell in July from around £6 7s. 6d. to £5 17s. 6d. (1.23c. to 1.15c. per lb.). Home prices were, per metric ton, on Aug 1:

	Fr.	
Wire rods	665 to 670	$31.75 to $32.00 per gross ton
Bars	580 to 590	1.24c. to 1.26c. per lb.
Bands	870 to 875	1.85c. to 1.87c. per lb.
Sheets (6 mm. or No. 6½ gage)	720 to 725	1.53c. to 1.55c. per lb.
Sheets (3 mm. or No. 11½ gage)	750 to 760	1.60c. to 1.62c. per lb.
Sheets (1 mm. or No. 19½ gage)	1,150 to 1,200	2.45c. to 2.56c. per lb.

The general view prevailing in Belgium is that the Dawes Settlement will lead to at least a temporary revival of business. Doubt is felt only as to which countries will profit. The expected flow of foreign capital into Germany would normally result in a revival of industrial and domestic construction; and heavy expenditure on German railroads may be expected as soon as the new independent corporation gets to work. From this, and from a general revival of confidence in Europe, is expected an improvement in the steel market.

Belgian currency exigencies urgently require an increase in exporting, as the foreign trade and foreign payment balances are still heavily adverse. Whereas in 1913, Belgium's imports exceeded her exports by only fr. 1,334,000,000, the excess in 1922 was fr. 3,017,000,000, and in 1923 fr. 3,694,000,000. Reckoned, however, in gold francs, the adverse trade balance is less than before the war. Belgium has State foreign debts, constituting 23½ per cent. of her whole debt; and she has lost a great part of the interest and dividend bearing 7 billion gold francs invested abroad before the war.

FRENCH MARKET PESSIMISTIC

Iron and Steel Interests Fearful of Possible German Action—Pig Iron Dull but Rolled Steel Is Active

PARIS, FRANCE, Aug. 22.—Holiday influences were apparent this week and last week in the French iron and steel market, and most sections were extremely quiet. The home trade continues to suffer from the hesitation and reserve of buyers, while the export market—quite inactive—has exceptionally hard competition from German industrials, who have just deprived British ironmasters of an order of 1500 tons of rails for the Hull tramways.

On the whole, one is rather pessimistic on the repercussion on the French metallurgical market of the last agreements of the London Conference. Even if our industrialists are assured, theoretically, of their supply of metallurgical coke for the immediate future—what kind of guarantees will they have after the evacuation of the Ruhr? It is hoped, however, that the commercial understandings to be concluded between France and Germany will cover this risk.

Coke.—Supplies of indemnity coke to the Orca for the first 18 days of August were 165,207 tons, or a daily average of 9235 tons.

Pig Iron.—The pig iron market developed no activity during the week, influenced by general conditions. In spite of this, French ironmasters endeavor to maintain in blast as many furnaces as possible, although some already are working at a reduced rate. In the department of Moselle the number of furnaces in operation is 43 out of 66. Part of the output is being put into stock and the plants are trying to develop their exports, notably to Belgium. A few inquiries f.o.b. Antwerp have been received for chill-cast iron No. 3. It is generally believed that as soon as the political situation is clearer the market will come out of its slumber.

The price of 310 fr. ($17.02 per gross ton) for chill-cast iron No. 3 (2.5 to 3 per cent Si) still applies, but with some difficulty. The Belgian export rates are for chill-cast iron No. 3: 350 to 355 ($19.22 to $19.50) f.o.b. Antwerp. The Luxemburg and Lorraine plants quote 5 fr. higher. Hematite is unaltered at 425 to 430 fr. ($23.34 to $23.61) at works. British producers continue their offers, but unsuccessfully.

Semi-Finished Products and Rolled Steel.—Compared to the general situation of the market, the activity of these two departments is satisfactory. Inland prices have been unaltered since last week, but might be readjusted at the end of the present month.

In beams very little business is passing and prices range between 51 and 52 fr. per 100 kilos (1.25c. and 1.27c. per lb). For other grades prices are rather steady between 56 and 58 fr. per 100 kilos (1.37c. and

1.42c.), delivery times varying from 6 to 12 and even 15 weeks, according to producers.

Belgian export rates for semi-finished products are: Blooms, 470 to 475 fr. ($25.81 to $26.08); billets, 500 to 510 fr. ($27.45 to $28); largets, 530 to 540 fr. ($29.10 to $29.65 per gross ton). The sterling rates are, f.o.b. Antwerp: Blooms, £5 7s. 6d. ($23.65); billets, £5 12s. 6d. ($24.75); largets, £5 15c. ($25.30).

Belgian quotations in rolled steels are, f.o.b. Antwerp: Bars, 555 to 565 fr. (1.36c. to 1.39c. per lb.); beams, 545 to 555 fr. (1.34c. to 1.36c.). On the other hand, the offers in sterling have been slightly raised. For ordinary shapes we note the price of £6 (1.18c.), against £5 17s. 6d. (1.15c.) last week; some plants would have dealt even at £6 2s. 6d. and £6 5s. (1.20c. and 1.23c.) for the same kinds.

Sheets.—This section shows satisfactory activity, in medium and light gages more particularly. Ruling quotations on the inland market are, per 100 kilos: 75 to 80 fr. (1.84c. to 1.96c. per lb.) for heavy sheets; 92 to 95 fr. (2.26c. to 2.33c.) for medium sheets; 105 to 110 fr. (2.57c. to 2.70c.) for light sheets. The Belgian rates f.o.b. Antwerp are in basic steel:

	Fr.	Per Lb.
5 mm. (No. 6½ gage) and over	665 to	675 or 1.63c. to 1.66c.
3 mm. (No. 11½ gage)	720 to	730 or 1.77c. to 1.79c.
2 mm. (No. 14 gage)	800 to	810 or 1.96c. to 1.99c.
1½ mm. (No. 16½ gage)	930 to	940 or 2.28c. to 2.31c.
1 mm. (No. 19½ gage)	1,050 to	1,100 or 2.57c. to 2.70c.
0.5 mm. (No. 25½ gage)	1,250 to	1,300 or 3.06c. to 3.19c.

In heavy gages German competition is very keen, the offers on the London market being at the rate of £7 3s. 6d. and £7 5s. (1.41c. to 1.42c.) for 5 mm. and over. In the Sarre the following prices are recorded: 5 mm. and over, 77 fr. (1.89c. per lb).; light gages, 113 fr. (2.77c.); medium sheets, 3 mm., 86 fr. (2.11c.); 4 mm. (No. 9 gage), 84 fr. (2.06c.); delivery, 2½ to 3 months. In the North, the corresponding grades are respectively 84 fr. (2.06c.), 105 fr. (2.57c), 90 and 87 fr. (2.21c. and 2.13c.); delivery, 2 months.

Boiler sheets are worth 86 fr. (2.11c. in the North, 85 fr. (2.08c.) in the East and 81.50 fr. (2c.) in the Sarre.

Wire Products.—This section is unaltered and, owing to the dullness of the market, wire rod is being quoted from 620 to 650 fr. per ton ($34.05 to $35.70.)

British Market Despondent

LONDON, ENGLAND, Aug. 21.—During the past week there have been further interruptions in connection with trading in iron and steel by the annual race week at Stockton causing a shut-down of all plants in the North-Eastern district. With the month accordingly broken by these periods of holidays in various parts of the country, the iron and steel markets naturally have been considerably unsettled. Nevertheless trade generally is poor and no orders of importance seem to be coming into home mills, either for pig iron or for manufactured materials.

Cleveland makers have further reduced their quotations in their endeavors to clear some of their stocks, but buyers still refrain from committing themselves, except to cover bare necessities and even 84s. ($18.92) for No. 3 g.m.b. is difficult to dispose of in any decent quantities. Furnaces have been damped down in various parts, but without success, and in Scotland there is talk of still further curtailment of output. Scotch steel makers were fully confident that orders would come in again after their annual holiday, but so far they have been disappointed and, except in the case of sheet makers, who have considerable business on hand, orders are few and far between.

Belgian Iron and Steel in July

ANTWERP, BELGIUM, Aug. 23.—The production in Belgium for the month of July, with forty-nine blast furnaces operating, showed a general increase on the figures for previous months as follows:

	Tons
Pig iron	247,400
Steel ingots	238,500
Steel castings from furnace	6,500
Finished steel	202,800
Finished iron	16,400

JAPAN BUYS TIN PLATE

Oil Company Places 10,000 Boxes—Political Difficulties Curtail Chinese Activity

NEW YORK, Sept. 2.—Export demand is slightly less active with Japan, but shows a small increase with Chinese markets, largely in purchases of wire shorts. The market on wire shorts has been considered too high at about $51 per ton, f.a.s. Atlantic port, but a recent reduction by producers of their asking prices has resulted in the placing of a little business at several dollars per ton lower. Exporters to China feel that with a revival of the political difficulties in China that may again lead to serious fighting, business will continue light for some time. German competition for Chinese trade has been keen, particularly in electrical units, but as a rule settlement of the reparations problem in Europe is not expected to increase Germany's competitive ability in the Far East to any extent. It is pointed out that German sellers' costs will probably be quite as high as at present, due to numerous taxes, etc.

Japanese buying of tin plate continues one of the principal features of this market. One large Japanese export house has closed on 1000 boxes and another prominent company was awarded 10,000 boxes by the Ogura Oil Co. Purchasing for the Tokio subway, now under construction, should prove a source of fairly good business for some time. At present 750 tons of channels, on which bids were recently opened, are still pending. Another structural steel inquiry is from the Imperial Government Railways and calls for 207 tons of structural material, bids on which go in Sept. 3. In rails an inquiry is now in the market from the Nagoya Municipal Railroad, calling for 20 miles of 75-lb. sections, to be delivered c.i.f. Yokaichi.

Sales of light gage black sheets to Japan are confined to a few small lots, probably largely as a result of the firm position of the mills. The leading export interest is reported to be quoting $93.50 per ton, c.i.f., and another large export interest is holding to $93 per ton. Although the Reconstruction Bureau was in the market recently for 1700 tons of sheet steel piling, which was awarded to the Mitsubishi Shoji Kaisha, New York, sellers to Japan are not inclined to expect much business from this source in the near future.

European mills are evidently extremely desirous of booking rail tonnages, according to importers in New York, who are in communication with German and French sellers. One importer claims to be able to quote between $9 and $10 per ton under the delivered price of domestic mills on shipments to roads in the Southwest.

A train of 19 cars, or 536 tons, of cast-iron soil pipe was recently shipped by the Central Foundry Co. from Tuscaloosa, Ala., to Mayevez, Porto Rico, via Jacksonville, Fla. This is the second shipment by this company to Porto Rico. The previous shipment consisted of 48 cars.

Belgium Iron and Steel Production

BERLIN, GERMANY, Aug. 18.—The number of blast furnaces at work has not yet reached the pre-war figure of 54, but it has rapidly recovered, from 14 in 1921 to 48 in June this year. Pig iron production was (in metric tons):

1913, monthly average	207,058
1924, January	208,980
1924, February	205,930
1924, March	230,490
1924, April	239,530
1924, May	246,520
1924, June	236,720
1924, first half year	1,575,228
1923, first half year	996,820

Steel production also shows a large increase over the figures of 1923 and 1913. Figures are (in metric tons):

	Raw Steel	Finished Steel
1913, Monthly average	200,398	154,922
1924, January	224,670	200,900
1924, February	219,160	192,820
1924, March	234,170	206,470
1924, April	233,630	195,670
1924, May	243,540	203,700
1924, June	218,640	184,190
1924, first half year	1,574,208	1,338,672
1923, first half year	1,017,610	888,800

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ESTABLISHED 1855

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Who Are the Capitalists?

THE following is an excerpt from some recent remarks by an American communist speaker who was trying to persuade his audience to follow his leadership:

> The rotten capitalist stuff that they teach to our children now is shameful. It only goes to make lick-spittles out of the rest of the slaves of capitalism. When we have the schools we can begin to teach real communism. My! How the parasites hate that word "communism!" Well, now, I will tell you what real communism is. It does not mean that we will take away from you your bed and your toothbrush or your piano or your clothes; it means, on the other hand, that you will have these things more abundantly. But to the capitalist it means that we will put him in overalls and make him go to work or let him starve. How would you like that for a change? How would you like to see your boss put on overalls and do the work you are now doing, so that you could have a chance to rest and enjoy some of the comforts of life that he now enjoys, while you slave and sweat and take his abuse? Well, that's what you would have and will have when we have real communism in America.

To any intelligent mind the above is pure gibberish; but all minds are not intelligent and there are many upon which it makes an impression. In Russia it made a very great impression. In America it does not make so much owing to the superior intelligence of our people in general. But we can see milder forms of the same misconception running up into really intelligent strata, and it is for that reason that we may usefully take such nonsense as a text.

In the first place, who are the capitalists? Are they the 350,000 stockholders of the American Telephone & Telegraph Co. and the 100,000 employees of that company who are buying shares by gradual payments? Are they the 800,000 stockholders in the steam railroads of the United States? And similarly as to many of our great industrial corporations? By far the great majority of those stockholders are already workers, and that they have been efficient and thrifty workers is the reason why they are now stockholders and capitalists. Many of them still wear overalls. As for those who do not, there would be no good in making them wear them if the nature of their work does not require it.

It is probable, however, that the agitator who is fomenting discontent does not have in mind these, the real capitalists; but rather is vindictive toward the persons comprising the management of industry, who may not be capitalists at all, but simply wage earners, with the only difference from the humble that their wages are larger. This confusion appears in the references to "capitalists" and "bosses" as if they were synonymous.

The experience of the human race, through all the ages, has demonstrated that people need pilotage, management, or bossing, whatever term it may please anybody to use. There must be a principle of authority, founded primarily upon superior intelligence. Capitalists alone cannot do anything. Capital itself is a most fragile and helpless thing; even more so than labor alone. From any of our great industrial corporations of today remove the directing brain and its capital quickly proceeds to become unfruitful and in relatively short order changes to useless and worthless junk; but the labor that was formerly employed by it disperses and obtains a living, more precarious and not so good, in other ways.

Without pilotage capital does not know what to do; nor does labor, beyond living according to the conditions of primitive civilization.

To the simple-minded, and most people are such, railroads and factories appear to run themselves. Without the slightest conception of the herculean efforts that were expended in creating them, there is formed the idiotic idea to dismiss their pilots and let the workmen enjoy a fancied ease. The simple-minded Russians fell victims to that idea, with consequences that our present agitators know as well as anybody else.

It is the discontented among our workmen whom we must educate; and fortunately they are not so ignorant as many of the philanthropists

who play into the hands of self-seeking agitators. The average American workman, whether he be employed in connection with a blast furnace or in a cotton mill, is thoroughly conscious that he, either individually or collectively, does not know how to run it, and the last thing in the world that he wants is to be constrained to try to do so. All that he wants in fulfilling his duties is a square deal, and that he ought to have.

But to the few who listen welcomingly to the foolish words of agitators, telling them to put the bosses in overalls, let us ask them what would happen to themselves if they should succeed in doing so. After wrecking one plant by mismanagement they might migrate to other plants, or to other industries, and still find something to do; but if they should wreck all plants and all industries by putting all the bosses in overalls, who would there be then to tell them what to do? And if not that what would they do? In fact, Russia has already given us the answer.

Coming Era of Distribution Efficiency

ENGINEERING'S great contribution to the general welfare has been the production of goods. Hereafter it will give major attention to the distribution of goods, to the economics of transportation. After the introduction of the steam engine there was no advance of equal importance until the coming of the internal combustion engine. This relatively recent development has centered largely in the small units suited to the automobile and the motor truck, to the automotive field as a whole. To satisfy a demand for large units, the field of the heavy oil engine needs broadening. Fear of an ultimately inadequate supply of fuel oil is groundless, for a quantity of oil far exceeding nature's supply as such may be obtained from the distillation of coal.

The foregoing are in essence observations made by Dr. Lucke of Columbia University, at the formal commercial presentation to the industrial world last week of the new Diesel oil engine described on another page.

The thoughts are not new and probably were not intended to be taken without qualification. But they are important as emphasizing that the focal point of engineering in the years next to come is to be distribution, also as emphasizing that the present wasteful practice of burning coal in the raw state is passing out, and that eventually no coal will be mined that is not put through the process of deriving those constituents that may be most efficiently utilized.

All admit the importance of solving the distribution problem. In the most baffling way cost factors expand between producer and consumer, and no Congressional investigation has been able to throw useful light on the answer. Makers of material-handling and labor-saving appliances have not been slow to look for opportunities, and naturally the builder of the new engine believes his creation fits into the program of cutting distributing costs, particularly in water transportation.

However much has been done, there is still great promise of reward for intensive study of distribution economies. The results, indeed, may one day be fairly comparable with the brilliant record of engineering in the field of production.

As to the processing of coal, so called, many minds are at work on low-temperature distillation schemes, with plants that have passed beyond the laboratory scale. The commercial production of tarry oils, among other things, suitable for internal combustion motor use is already here. In this the super-power movement has a strong ally and not an opponent, and the future looks bright for a far better utilization of the resources of nature than seemed possible only a few years ago. At the same time research is on a scale never before known. That means that leaders of industry are alert and far-sighted and that our engineering schools are facing opportunities beyond the largest dreams of two decades ago.

Less Seasonal Talk in Steel

A CHANGE has come in the steel trade's view of its market, in that there is less talk than there used to be about seasons. The trade is getting nearer to the actual facts in its discussion and comment. Before the war it was all nicely mapped out for the twelvemonth, and if the market did not act accordingly the fact was overlooked as merely constituting an exception. It was customary to predict that July and August would be dull, and some observers even made the fine point of the second half of August being duller than any other part of the two months. Regularly September was looked to to bring a seasonal improvement, and if the improvement did not come in September there was the explanation that it was a little slow and was coming in October. If November and December proved dull, then business was going to become good "after the turn of the year," and so on. In the retrospect it looks as if this seasonal talk was prompted in large part by a desire to find excuses for the market if it did not behave satisfactorily.

Of course there are some seasonal influences. It is somewhat more difficult to get boards of directors to take important actions during July and August. Toward the close of the year there is a disposition to reduce inventory. These, however, are minor influences in a market which has such wide ranges in volume of activity and in prices. The dullest month of a good year may be more active than the best month of a poor year. It is not well, however, even to speak of years in steel, meaning calendar years, for if dividing lines could be drawn showing when steel is above normal and when below, those dividing lines would rarely if ever fall close to Jan. 1, where the calendar divides the twelve months. To illustrate, not one of the nine calendar years between 1906 and 1916 showed approximately full operation of the steel industry, yet there were in that time two periods of full activity, each much more than twelve months long.

Most classes of activity do have their seasons, but steel is a commodity that goes into many classes of consumption, each having its own season, and the composite season thus made is a drab affair, with no lines in it and no marked shading.

There is the further smoothing out influence that some classes of steel are bought further ahead of their prospective consumption than others. For a large building, for instance, the structural steel will be bought long before the nails.

The steel trade is much better off in having so largely repudiated the talk about seasons. Any misconception is likely to be harmful, by giving men a wrong attitude. If the steel salesman is given the impression that summer is dull he is likely to become dull himself. If the buyer thinks September should bring a great improvement in trade and it does not, he becomes unduly conservative.

It might be said that recent steel market history furnishes some instances of its acting seasonally. That is true, but it furnishes other instances on the other side. Both in July, 1921, and in July of this year the rate of mill operation ceased decreasing and began increasing. These turns had been preceded by liquidation, so that the fundamental cause could be traced far back. On the other hand, it was in July and August of 1920 that premiums for prompt delivery of some lines of steel reached new high points. Also, we had the beginning of a great buying movement in December, 1922, whereas traditionally December is a dull month. When the steel market sets about to change its tone, it does not consult the calendar, and in endeavoring to prognosticate the future it is well to watch the trade itself rather than use the calendar as a guide.

Crop and Commodity Prices

ONE may observe among steel producers a disposition to assume as "normal," not average prices and production, but maximum prices and production. It is a form of optimism that is perfectly natural.

The same disposition to take maximum or best performances as natural and normal is seen among farmers. Hence there is complaint. The farmers have not been doing so well lately as they did at certain other times. Now, as to wheat, it seems really to be a fact that a large area in the Northwest is not well suited for wheat raising. From the 98th meridian of longitude in the south and from the 99th in the north, west to the foothills of the Rockies, the average rainfall ranges from 20 inches in the east down to 10 inches in the west, and 20 inches each year is said to be requisite for general farming. If the year is a good one in rain, the crops are all right. The average or normal is made up of good and bad years, but comparisons, either unconsciously or for the purpose of making a point, are made with good years and not with the normal or average.

Just now the crop prospects are good and the commodity world, which has things to sell to the farmer, is rejoicing. The turn is hailed as a restoration of normal.

The facts are obtainable, but are not usually obtained. A really mischievous thing is the constant comparison of prices from time to time with 1913, as if there had been something magic about 1913 which made it a perfectly normal year, an invariable rule or guide. We have now the Department of Labor's statement of wholesale prices in July last, which shows, with 1913 as 100, farm products at 140.9 and all commodities at 147.0. Farm products have been rising relative to commodities in general, and the common view is that they are returning to "normal." The Department of Labor is not responsible for any such misconception, for it merely presents its reports, carefully and intelligently compiled, based on 1913. It is the public that assumes that 1913 is "normal."

But as a matter of fact 1913 was not normal, if normal means an average. As suggestive of that, the relatives originally issued for 1913, which were based on the average of the ten years 1890 to 1899 as 100, showed farm products at 165.8 and all commodities at 135.2, whereby farm products were 22½ per cent above their 1890-99 relation to commodities. To show how differently the figures come out according to the basis taken, we have computed relatives backward in point of time, taking prices in July, 1924, as 100. In the table below these relatives are given for various years. In 1890, for instance, farm products were only 47 per cent of their present prices, while commodities were 57 per cent, so that the farmers were not so well off, in the purchasing power of their dollar, as at present. It was not until 1910, according to the table, that their dollar was worth more than now.

Past Prices of Farm Products and All Commodities Relative to Present Prices—July, 1924 = 100

	Farm Products	All Commodities
1890	47	57
1890–99	43	50
1900	47	56
1910	71	66
1912	73	67
1913	71	68
1919	164	140
1921	88	100
July, 1924	100	100

The comparisons with 1913 make the farmer appear badly off in July, 1924, though not nearly so badly off as he was before the recent rise in grain. In 1919 farm products were very high relative to commodities. The farmers are badly off now by comparison with that year, for then their selling prices were 64 per cent above the present, while commodities in general were only 40 per cent, but it will be recalled that the farmer had the benefit of Government price fixing on grain long after the armistice.

The figures show in a striking way how much difference is made by taking different periods as normal. Most comparisons would show the farmer to be better off today than usual, but the particular comparison with 1913, which is made the basis of much of the present widespread complaint, shows him at a serious disadvantage.

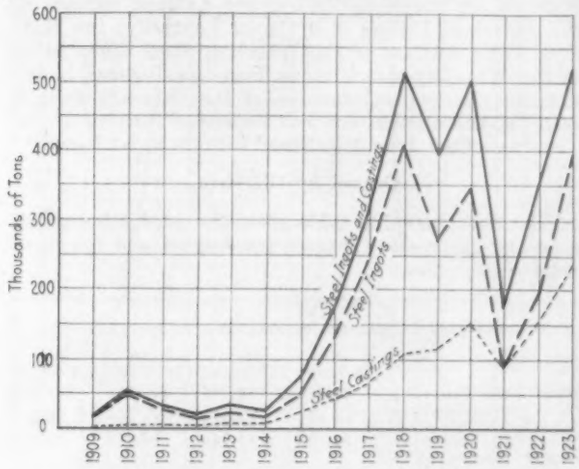
THE parlous state of the British steel trade is illustrated by an offer recently made by Sir James Knott of the Prince Line to assist 200 ex-employees of the Spencer Steel Works in emigrating either to the United States or to overseas dominions. Sir James Knott is paying for the passports, etc., and will allow £1 a week to the emigrants' dependents for a month or six weeks. Within a few days 154 unemployed steel workers accepted this offer.

ADVENT OF NEW BUSINESS VANE

Electric Steel and Its Development—Power Requirements Analyzed

BY REGINALD TRAUTSCHOLD*

STEEL production has grown to be accepted by students of business cycles as a dependable indication of industrial prosperity—as a vane showing the ups and downs in business activity. Consequently, the record of electrical steel ingot and casting output should be of particular interest for, besides being a matter of considerable individual moment, it lends itself admirably to similar interpretation.



Yearly Production of Electric Furnace Steel Ingots and Castings in the United States, 1909 to 1923 Inclusive

Prior to the outbreak of the World War relatively little headway had been made in electrical steel production but, with the crying need for steel ingots and castings, activity was greatly stimulated and production rose rapidly—in 1918 exceeding 500,000 tons. In 1914 the combined output of electrical steel ingots and castings was less than 25,000 tons.

Cessation of war demands naturally was reflected by a sharp falling off in production but, during the busy year 1919-1920, the high record of war requirements was almost regained. The following year of industrial readjustment, when every industry suffered and unemployment assumed alarming proportions in many industries, there was a substantial decline in electrical steel output, but this was followed by as marked a rise in production with improvement in business—the output of electrically produced steel during 1923 exceeding even the high mark set for war activities.

Cost Considerations Regaining Sway

These fluctuations in electrical steel production are highly significant, both from the viewpoints of the steel industry and of the industrial prosperity of the nation. The rapid growth in electrical steel output during the war might not in itself signify anything of great importance, if it were not for the subsequent development, for the demand for steel ingots and castings was then so great that the attainment of a maximum steel output was the chief consideration. Every other question had to be side-tracked. Since the war, however, cost considerations have largely regained their customary domination and events in the steel industry—such as the abolition of the 12-hr. day—have tended to emphasize the need of greater economy in every production process. In view of this situation, the continued growth in the electrical production of steel is indeed important, for such increase could have occurred only if economies resulted.

While as yet no great proportion of the nation's steel output is electrically produced—only about 1.2 per cent—the amount now produced annually is twenty times as great as before the war. The increase in total steel output, on the other hand, has not been more than 40 per cent. It would appear, consequently, that the electrical production of steel ingots and castings is bound to become an influential factor in industrial development. Its sensitiveness to trade fluctuations and general business activity, furthermore, is seen to be very pronounced, from the records of output for recent years, making such records valuable as business vanes.

Electric Power Requirements Heavy

To produce 500,000 tons of steel ingots and castings electrically a very considerable amount of electric energy is entailed—equal to about one-tenth of that now employed for all residential electric service—so the development of electrically produced steel is a matter of great moment to the electrical industry. If the present total steel output were electrically produced it would require an electric energy supply some eight times as great as that now utilized for all residential service. This means that if one-eighth of the present steel output were produced electrically—a condition far from unattainable in the near future, in view of those economies which have warranted the growth in electrical steel production beyond maximum wartime requirements in the brief period of a year or two—as much electric energy would be utilized as would suffice for customary residential use in every dwelling in the country not already enjoying electric service.

To produce one ton of steel electrically entails the use of twice as much electric energy as is employed annually by the average family residing in an electrified home. As there are only some 2,000,000 dwellings in the country—about half of which are electrified—and the annual steel output measured in tons now totals about double such figure, some idea may be formed of the stupendous demand for electric energy to be anticipated in the production of steel ingots and castings. This demand promises to be far beyond the capacity of the electric light and power service companies and doubtless explains in large measure why such a large proportion of the electric steel output has been produced, and probably will continue to be produced, not by energy supplied by our public utility generating stations, but by private power plants operated by the steel interests.

Development of Power Plants to Supply Steel Mills

At present, at least, there are no electrical public utility systems of sufficient capacity to supply the energy entailed in the production of the steel needed even by the limited requirements of the territories they serve with electric light and power, to say nothing of the demands for electric energy for steel fabrication processes—rolling, stamping, broaching, drawing, etc. In fact, it would be more feasible for the steel interests to supply the electric energy for domestic service than for the electric utilities to furnish the energy for the steel industry.

Eventually great electric power plants should arise for steel production service, rivaling in size those of the public utilities—possibly outstripping them—and providing highly valuable data in regard to approved operation practices and requirements. Such situation would be highly desirable, for unquestionably the more efficiently operated steel plants, for they should logically be operated the more economically, will provide incentives in bringing about more efficient operation of electrical utility power plants.

*Society for Electrical Development, Inc., New York.

Puddling Scale Reduced for Mid-Western Mills

Tonnage rates for puddlers working in mid-western mills subscribing to the sliding scale wage agreement of the Amalgamated Association of Iron, Steel and Tin Workers will be reduced to $12.13 per ton for the September-October period, from $12.63, paid in July and August. The cut follows examination of sales sheets covering shipments for the 60-day period ended Aug. 20, which disclosed a reduction in the average selling price of merchant steel bars from $2.25 per ton, disclosed two months ago, to $2.15 per 100 lb.

Finishers receive a reduction of 5 per cent, as a result of the settlement, conducted at Youngstown between the Western Bar Iron Association and the Amalgamated association.

AUGUST IRON OUTPUT

Increase Over July 3428 Gross Tons Per Day

Net Gain of 7 Furnaces, with 14 Blown In and 7 Shut Down

After an uninterrupted and severe loss for four months, the pig iron output in August made a sharp gain. According to returns collected almost entirely by telegraph, the increase in daily production in August over July was 3428 gross tons, contrasting with a decrease in July from June of 9964 tons per day. The net gain in active furnaces in August was 7, comparing with a net loss in July of 17, with 46 the net loss at the peak of the decline in May.

The production of coke and anthracite pig iron for the 31 days in August amounted to 1,891,145 gross tons, or 61,005 tons per day, as compared with 1,784,899 tons, or 57,577 tons per day, for the 31 days in July. This is a gain of 106,246 tons, or 3428 tons per day, about 6.5 per cent. The August production is about 75,000 tons in excess of the same month in 1922, when the coal and railroad strikes suddenly cut down the furnace operations. There were 14 furnaces blown in and 7 blown out or banked during August. Of the 14 blown in, 8 were independent steel company and 4 were Steel Corporation furnaces, the other 2 being merchant. Three independent and 2 Steel Corporation furnaces were among those shut down.

The capacity of the 151 furnaces active on Sept. 1 is estimated as about 63,000 tons per day, as compared with 55,350 tons per day for the 144 furnaces in blast on Aug. 1.

The ferromanganese and spiegeleisen outputs fell off sharply in August. There were 10,718 tons of ferromanganese and 8010 tons of spiegeleisen produced last month, the former being the smallest for the year.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from August, 1923, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
August, 1923	86,479	24,795	111,274
September	78,799	25,385	104,184
October	77,255	24,331	101,586
November	72,352	24,124	96,476
December	69,921	24,304	94,225
January, 1924	73,368	24,016	97,384
February	83,126	22,900	106,026
March	86,276	25,533	111,809
April	82,101	25,680	107,781
May	62,176	22,182	84,358
June	50,237	17,304	67,541
July	43,353	14,224	57,577
August	45,524	15,481	61,005

The figures for daily average production, beginning with January, 1918, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1918—Gross Tons

	1918	1919	1920	1921	1922	1923	1924
Jan.	77,799	106,525	97,264	77,945	53,063	104,181	97,384
Feb.	82,835	105,006	102,720	69,187	58,214	106,935	106,026
Mar.	103,648	99,685	108,900	51,468	65,675	113,673	111,809
Apr.	109,607	82,607	91,327	39,768	69,070	118,324	107,781
May	111,175	68,002	96,312	39,394	74,409	124,764	84,358
June	110,793	70,495	101,451	35,494	78,701	122,548	67,541
July	110,354	78,340	98,931	27,889	77,592	118,656	57,577
Aug.	109,341	88,496	101,529	30,780	58,586	111,274	61,005
Sept.	113,942	82,932	104,310	32,850	67,791	104,184	.....
Oct.	112,482	60,115	106,212	40,215	85,092	101,586	.....
Nov.	111,802	79,745	97,830	47,183	94,990	96,476	.....
Dec.	110,762	84,944	87,222	53,196	99,577	94,225	.....
Year	105,496	83,789	99,492	45,325	73,645	109,713	.....

Among the furnaces blown in during August were the following: One Donner furnace in the Buffalo district; E furnace of the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; No. 2 Clairton furnace and A. and G. Edgar Thomson furnaces of the Carnegie Steel Co. and one Aliquippa furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; J furnace at the Cambria plant of the Bethlehem Steel Corporation in western Pennsylvania; one Low Moor furnace in Virginia; No. 2 Steubenville furnace of the Wheeling Steel Corporation in the Wheeling district; No. 5 Ohio furnace of the Carnegie Steel Co. and B furnace of the Youngstown Sheet & Tube Co. in Mahoning Valley; one River furnace in northern Ohio; one Iroquois furnace in the Chicago district and the Cumberland furnace in Tennessee.

Among the furnaces blown out or banked during August were the following: The Standish furnace in New York; No. 3 Newcastle furnace of the Carnegie Steel Co. in Shenango Valley; one Ashland furnace of the American Rolling Mill Co. in Kentucky; the Martin's Ferry furnace of the Wheeling Steel Corporation in the Wheeling district; one Madeline furnace in the Chicago district; one furnace of the Colorado Fuel & Iron Co. in Colorado and one Bessemer furnace of the Tennessee Coal, Iron & Railroad furnace in Alabama.

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for August and the three months preceding.

Pig Iron Production by Districts, Gross Tons

	Aug. (31 days)	July (31 days)	June (30 days)	May (31 days)
New York	80,686	86,738	108,263	151,649
New Jersey	.....	.....	.....	.....
Lehigh Valley	57,745	45,480	53,627	79,843
Schuylkill Valley	51,153	50,735	56,472	63,578
Lower Susquehanna and Lebanon Valleys	21,696	21,970	37,647	44,825
Pittsburgh district	425,471	380,058	429,821	541,295
Shenango Valley	82,058	66,350	65,566	86,777
Western Pa.	59,479	43,754	58,282	97,951
Maryland, Virginia and Kentucky	33,900	42,072	42,601	56,653
Wheeling district	72,678	61,728	94,213	123,689
Mahoning Valley	166,453	142,348	124,065	190,104
Central and Northern Ohio	222,070	223,295	260,253	301,187
Southern Ohio	12,243	12,509	19,848	43,624
Illinois and Indiana	270,194	267,161	325,142	440,790
Mich., Minn., Mo., Wis., Colo. and Utah	103,798	109,068	119,119	132,169
Alabama	215,556	218,676	219,507	249,268
Tennessee	15,965	12,957	11,795	11,708
Total	1,891,145	1,784,899	2,026,221	2,615,110

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the foregoing totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production		Spiegeleisen and Ferromanganese			
			1923		1924	
	1923	1924	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,479,727	2,274,005	19,358	12,056	20,735	7,948
Feb.	2,259,154	2,410,658	21,282	3,657	22,405	9,870
Mar.	2,724,305	2,674,565	20,730	13,832	22,351	13,796
Apr.	2,704,360	2,463,027	20,808	7,440	23,580	4,240
May	2,976,892	1,927,461	19,568	9,533	14,993	9,336
June	2,727,208	1,507,110	19,717	18,289	20,049	9,405
½ year	15,871,646	13,256,826	121,564	64,807	124,113	54,595
July	2,752,738	1,343,952	26,493	12,876	14,367	15,328
Aug.	2,680,851	1,411,234	22,045	5,586	10,718	8,010
Sept.	2,363,967	.....	23,206	4,478	.....	.....
Oct.	2,394,922	.....	20,015	15,931	.....	.....
Nov.	2,170,567	.....	14,839	16,783	.....	.....
Dec.	2,167,563	.....	18,069	10,124	.....	.....
Year	30,402,254	.....	246,231	130,585	.....	.....

Production and Price Chart

The fluctuations in pig iron production from 1915 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of the daily average production, by months, of coke and anthracite iron. The dotted curve on the chart repre-

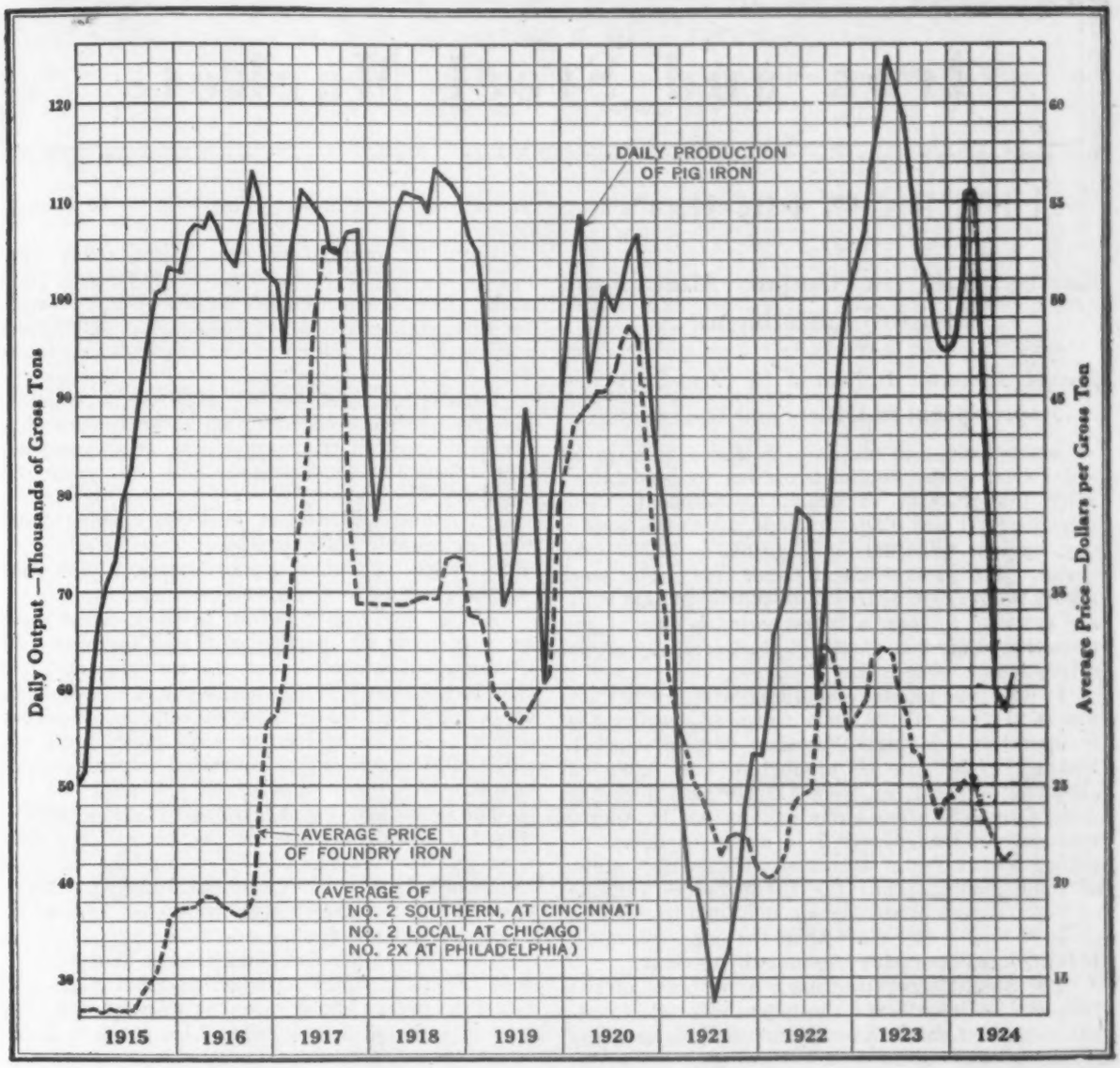


Diagram of Pig Iron Production and Price

sents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1920—Gross Tons

	1920	1921	1922	1923	1924
Jan.	3,015,181	2,416,292	1,644,951	3,229,604	3,018,890
Feb.	2,978,879	1,937,257	1,629,991	2,994,187	3,074,757
Mar.	3,375,907	1,595,522	2,035,920	3,523,868	3,466,086
Apr.	2,739,797	1,193,041	2,072,114	3,549,736	3,233,428
May	2,985,682	1,221,221	2,306,679	3,867,694	2,615,110
June	3,043,540	1,064,833	2,361,028	3,676,445	2,026,221
½ year	18,138,986	9,428,166	12,050,683	20,841,534	17,434,492
July	3,067,043	864,555	2,405,365	3,678,334	1,784,899
Aug.	3,147,402	954,193	1,816,170	3,449,493	1,891,145
Sept.	3,129,323	985,529	2,033,720	3,125,512	.....
Oct.	3,292,597	1,246,676	2,637,344	3,149,158	.....
Nov.	2,934,908	1,415,481	2,849,703	2,894,295	.....
Dec.	2,703,855	1,649,086	3,086,898	2,920,982	.....
Year*	36,414,114	16,543,686	26,880,383	40,059,308	.....

*These totals do not include charcoal pig iron. The 1923 production on this iron was 251,177 tons.

Production of beehive coke reported by the United States Geological Survey for the week ended Aug. 16 at 94,000 net tons, compared with 89,000 tons for the previous week and 334,000 tons for the corresponding week of 1923. For the year to date the total is given as 6,763,000 tons, compared with 12,473,000 tons in the corresponding period of last year. About 80 per cent of the total is credited to Pennsylvania and Ohio.

Norwegian Electric Ferromanganese for American Consumers

The Electro Metallurgical Co., 30 East Forty-second Street, New York, which has been manufacturing ferromanganese in its electric furnaces in Norway, has recently become an active seller of this alloy in the United States. The alloy is made from imported ores and is offered in competition with the blast furnace product of the British and American producers.

At the annual autumn meeting of the Institute of Metals, to be held in London, Sept. 8 to 11, the third autumn lecture will be delivered by W. M. Corse of the National Research Council, Washington, who will take as his subject "Recent Developments in Non-Ferrous Metallurgy in the United States With Special Reference to Nickel and Aluminum-Bronze." The lecture will be illustrated by motion pictures.

Bituminous coal production, after averaging since early in April less than the output for the same period in the year of 1921, showed for the week ended Aug. 23 8,293,000 net tons, or more than for any week since the beginning of April. Further, the car loadings for Aug. 25 and Aug. 26 exceeded 28,150, according to the U. S. Geological Survey, or more than in some time.

Iron and Steel Markets

UPTURN IN PIG IRON

August Gain in Output After Four Months' Curtailment

Larger Increase Indicated in Steel Ingots—Improvement in Orders and Operations

August pig iron statistics gathered by wire on Sept. 2 show the predicted upturn in production, after four months of drastic curtailment. The month's total was 1,891,145 tons, or 61,005 tons a day, against 1,784,899 tons in July, or 57,577 tons a day. The gain is about 6 per cent. For steel ingots the August figures to be published next week are expected to show a larger gain, in view of the reduction made last month in steel company stocks of pig iron.

In the four months beginning with April there was a net loss of 126 blast furnaces, leaving 144 in operation on Aug. 1, against 270 on April 1. Meanwhile the rate of production had fallen off about 50 per cent, or from 112,240 tons a day on April 1 to 55,350 tons a day on Aug. 1. In August there was a net gain of 7 in active furnaces, together with a faster operation of blowing engines at some plants. Thus the 151 furnaces running on Sept. 1 were producing about 63,000 tons a day, or 7650 tons a day more than the capacity of the 144 furnaces operating one month previous.

The Steel Corporation made a net gain of two furnaces last month and the independent steel companies gained five, while the number of merchant furnaces was unchanged. However, by better running the merchant furnaces made 1257 tons a day more than in July, while the steel company furnaces gained 2171 tons a day. Today the country is producing pig iron at a yearly rate of about 23 million tons, as against 20¼ million tons at the low point in late July and 41 million tons at the year's peak in early April.

This week's reports from steel companies show another gain in mill operations, bringing the Steel Corporation close to 60 per cent, while independent companies range from 45 to 60 per cent. As against 41.5 per cent for the industry in July, the average for August was probably above 50, and is now near 55.

It is the common report that August brought gains of 10 to 15 per cent, and in exceptional cases considerably higher, in the bookings of new orders. But the efforts of some producers to hold recent gains in operations have resulted in continued sharp competition, with irregular prices in important products, so that buyers' policy is little changed. The past week, in fact, has brought fresh evidence that stabilization of finished steel prices is not an early possibility.

The largest railroad equipment business since the first week of August is the Chesapeake & Ohio purchase of 1987 gondola car bodies, requiring about 20,000 tons of steel. The Pennsylvania Railroad is in the market for 6000 box and automobile cars, and the total of freight cars pending is 15,400. The Missouri Pacific is getting bids on 50 locomotives.

With the possible exception of one trunk line, rail buying for next year promises to be on a good scale. The Illinois Central, besides recent releases for early rolling, has a new inquiry for 60,000 tons and the B. & O. will enter the market at an early day.

Reports of steel to be taken by automobile builders are more encouraging, several large buyers being now in the market, and at Chicago demand from the implement industry is improving steadily.

Structural awards last week were only 15,600 tons, or roughly 2000 tons below those of the previous week. For new work pending 20,650 tons will be required.

August pig iron bookings in the Central West as now reported, particularly at Cleveland and Chicago, indicate more activity in those districts than in the East. The firmer prices of some sellers of foundry iron have followed considerable sales and it is now to be seen to what extent apparent gains in strength can be converted into actual advances.

The recent activity in ferromanganese, which included a round purchase by the leading domestic producer, has created an interesting situation. The $90 price seems to have been temporary, but there are still signs of freer competition than heretofore among foreign producers.

The Western bar iron settlement at Youngstown, as of Sept. 1 brings a reduction from $12.63 to $12.15 in the puddling rate, the average bar iron price in July and August being 2.15c. against 2.25c. in the preceding 60 days.

The Lake Superior iron ore movement in August was 6,687,000 tons, compared with 7,280,000 tons in July, while for August of last year it was 10,296,000 tons. To Sept. 1 the total was 28,796,000 tons, against 36,893,000 tons to Sept. 1 last year.

Pittsburgh

Little Forward Buying—Pig Iron and Scrap Firm

PITTSBURGH, Sept. 2.—A new week and new month have brought no spectacular changes in the iron and steel situation. August in almost all products was productive of much more business than the month before, but the increase is large expressed in percentage if not in tonnage and the steel industry still is well below what is commonly regarded as an economical operating rate. Ingot production in this and nearby districts still hovers below 60 per cent of capacity, this due to the fact that there is very little forward buying and operations consequently are largely governed by current demands. There is no question that a great many consumers are running very low in the matter of supplies, because the majority of orders specify early delivery and in not a few cases the business goes to the mill able to offer the best service.

While the last week has been productive of no important price changes, there is some uncertainty in

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Sept. 2, 1924	Aug. 26, 1924	Aug. 5, 1924	Sept. 4, 1923
No. 2X, Philadelphia‡	$21.76	$21.76	$21.26	$26.76
No. 2, Valley furnace†	**20.00**	19.50	19.00	24.50
No. 2, Southern, Cin'ti†	21.55	21.55	21.55	27.55
No. 2, Birmingham, Ala.†	17.50	17.50	17.50	23.50
No. 2 foundry, Chicago*	20.50	20.50	20.00	27.00
Basic, del'd, eastern Pa.	20.00	20.00	20.00	25.00
Basic, Valley furnace	19.00	19.00	19.00	25.00
Valley Bessemer, del. P'gh	21.76	21.76	21.76	28.26
Malleable, Chicago*	20.50	20.50	20.00	27.00
Malleable, Valley	**20.00**	19.50	19.00	24.50
Gray forge, Pittsburgh	**21.26**	20.76	20.26	25.76
L. S. charcoal, Chicago	29.04	29.04	29.04	32.15
Ferromanganese, furnace	**95.00**	90.00	99.00	117.50
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	37.00	37.00	38.00	42.50
O.-h. billets, Pittsburgh	37.00	37.00	38.00	42.50
O.-h. sheet bars, P'gh	37.50	37.50	38.00	42.50
Forging billets, base, P'gh	42.00	42.00	43.00	47.50
O.-h. billets, Phila.	42.17	42.17	43.17	47.67
Wire rods, Pittsburgh	46.00	46.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.00	2.00	2.00	2.40
Light rails at mill	1.85	1.85	1.85	2.15
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.32	2.32	2.42	2.67
Iron bars, Chicago	2.15	2.15	2.20	2.40
Steel bars, Pittsburgh	2.10	2.10	2.15	2.40
Steel bars, Chicago	2.10	2.10	2.15	2.50
Steel bars, New York	2.44	2.44	2.49	2.74
Tank plates, Pittsburgh	1.90	1.90	2.00	2.50
Tank plates, Chicago	*2.10*	2.15	2.25	2.60
Tank plates, New York	2.09	2.09	2.09	2.84
Beams, Pittsburgh	2.00	2.00	2.00	2.50
Beams, Chicago	*2.10*	2.15	2.25	2.60
Beams, New York	2.34	2.34	2.34	2.84
Steel hoops, Pittsburgh	2.60	2.60	2.60	3.15

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Sept. 2, 1924	Aug. 26, 1924	Aug. 5, 1924	Sept. 4, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.50	3.50	3.40	3.75
Sheets, galv., No. 28, P'gh	4.60	4.60	4.50	5.00
Sheets, blue an'l'd, 9 & 10	2.65	2.65	2.60	3.00
Wire nails, Pittsburgh	2.80	2.80	2.85	3.00
Plain wire, Pittsburgh	2.55	2.55	2.60	2.75
Barbed wire, galv., P'gh	3.50	3.50	3.55	3.80
Tin plate, 100-lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	**$18.00**	$17.50	$17.00	$20.00
Carwheels, Philadelphia	18.00	18.00	17.50	21.00
Heavy steel scrap, P'gh	17.50	17.50	17.50	18.00
Heavy steel scrap, Phila.	17.00	17.00	16.00	17.00
Heavy steel scrap, Ch'go.	**16.00**	15.50	15.50	16.50
No. 1 cast, Pittsburgh	18.00	18.00	18.00	22.00
No. 1 cast, Philadelphia	*18.00*	18.50	17.00	21.50
No. 1 cast, Ch'go (net ton)	17.50	17.50	17.50	19.50
No. 1 RR. wrot. Phila.	19.00	19.00	18.00	18.00
No. 1 RR. wrot. Ch'go (net)	14.00	14.00	13.50	16.00
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.00	$5.00
Foundry coke, prompt	4.00	4.00	4.00	6.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**13.75**	13.62½	13.25	14.00
Electrolytic copper, refinery	13.25	13.25	13.12½	13.50
Zinc, St. Louis	**6.30**	6.25	6.17½	6.50
Zinc, New York	**6.65**	6.60	6.52½	6.85
Lead, St. Louis	8.00	8.00	7.37½	6.70
Lead, New York	8.25	8.25	7.65	7.00
Tin (Straits), New York	**53.37½**	51.25	51.75	41.50
Antimony (Asiatic), N. Y.	*10.25*	10.50	9.00	7.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

THE IRON AGE Composite Prices

Sept. 2, 1924, Finished Steel, 2.510c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

Aug. 26, 1924,	2.510c.
Aug. 5, 1924,	2.524c.
Sept. 4, 1923,	2.775c.
10-year pre-war average,	1.689c.

Sept. 2, 1924, Pig Iron, $19.46 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

Aug. 26, 1924,	$19.46
Aug. 5, 1924,	19.29
Sept. 4, 1923,	25.38
10-year pre-war average,	15.72

1924 to Date			1923	
High		Low	High	Low
2.789c., Jan. 15		2.510c., Aug. 19	Finished Steel 2.824c., April 24	2.446c., Jan. 2
$22.88, Feb. 26		$19.29, July 8	Pig Iron $30.86, March 20	$20.77, Nov. 20

the minds of buyers that the bottom generally has been reached, hence the tendency to confine purchases to nearby requirements. The automotive industry appears to be a larger factor in demand recently, because if there has been no large buying from that source, at least there has been fairly free specifying against unshipped tonnages, this being particularly true of cold finished steel bars. Placing of strip business by automotive parts makers also shows some increase. Heavy tonnage products still are disappointing in point of bookings, although it is probable that if the present structural inquiry is a safe criterion the closing months of the year will be productive of a respectable amount of shape business.

The primary materials continue to show a stronger tendency. Prices below $20, furnace, for foundry iron have disappeared since a week ago. Closely related to a stronger tone of the pig iron market is a firmer market in furnace coke, which also has been helped by the fact that a broader demand for coal has begun to be reflected in the price of that product. All signs point to higher prices for scrap, with the appearance of any demand on the part of local steel manufacturers. Heavy melting steel is reported to have sold at $18 in the East and supplies from the West are cut off of Pittsburgh because outside points will pay higher prices.

Pig Iron.—Trading is not very active in this market, but so far as foundry grades are concerned the market is quite firm, because producers are not pressing sales. Those willing to take business last week at $19.50, furnace, no longer are disposed to sell at less than $20

and there have been a sufficient number of sales in the Pittsburgh district at that price to warrant the assertion that it is now the minimum price. Besides several small tonnages, we also note one lot of 500 tons of No. 2X iron at $20.50, furnace, or $20 for the base grade. Steel making grades are held at higher prices, but actual sales in the past week disclose no change from last week's prices. The only inquiry of any consequence for basic iron was for 5000 tons for shipment to Canton, Ohio, and this business went to a Valley furnace having a freight rate to destination of $1.26 per ton, at $19, furnace. Some Valley furnaces having a higher freight rate also quoted $19 and others as high as $20, but of course the buyer was not interested. As high as $21 now is quoted on Bessemer iron, but we note one sale of 1000 tons for delivery to Pittsburgh at $20, Valley furnace. W. P. Snyder & Co. make the average price of Bessemer iron shipped from Valley furnaces in August $20 and of basic $19, the same price as in July.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$19.00 to $20.00
Bessemer	20.00 to 21.00
Gray forge	19.50
No. 2 foundry	20.00
No. 3 foundry	19.50
Malleable	20.00
Low phosphorus, copper free	27.00 to 28.00

Ferroalloys.—Quotations of less than $95, Atlantic seaboard, for ferromanganese have disappeared, both domestic and British producers now holding that figure. The leading domestic commercial producer took a fair-sized tonnage at $90, seaboard, and one British maker went to $92.50 to secure some business. These prices, however, have been withdrawn and agents of British producers have been advised not to submit bids of less than $95. No further change has taken place in 50 per cent ferrosilicon prices since the recent advance to $72, delivered, by a small maker previously quoting $70. Current demand for that material is rather sluggish. Prices of spiegeleisen are fairly steady at recent levels, with demand moderate. Prices are given on page 595.

Semi-Finished Steel.—Sheet bars under contract are being released a little more freely with increased engagement of sheet rolling capacity, but there are not many strictly new inquiries and nonintegrated producers are not yet greatly concerned about their fourth quarter requirements. The capacity is there and in view of the fact that the general demand for steel is sufficient to engage only slightly more than half of the ingot capacity, there are no fears as to supplies. Billets and slabs are not showing much life. We note one moderate-sized sale of slabs at $38, Pittsburgh, this price obtainable because of special analysis. On slabs and billets of ordinary analysis there are offerings at $37 and also the intimation that a really sizable tonnage would induce concessions. There is still much comment on the wide spread between pig and scrap prices and those for billets, sheet bars and slabs; the answer probably is found in the fact that most producers have finishing capacity and do not want to encourage too strong competition on the finished steel by cutting prices of semi-finished steel. All makers of wire rods still are quoting them at $46, base, and on most of the current sales that price prevails. The quotation of 2c. on skelp is more of an asking than a selling price. Prices are given on page 595.

Wire Products.—Improvement in business continues, although it does not yet embrace barbed wire and fence, running strongest in nails and plain wire. No one yet claims that business is good, but each week shows a gain in the number and size of sales over those of the preceding one, and satisfaction is derived from the fact that deviations from quoted prices are becoming less frequent. Fall demand for fence rarely is so good as that in the spring and the fact that the crops are late this year is putting back the harvest to an extent that keeps the minds of farmers off the matter of fences. Prices are given on page 594.

Steel Rails.—Nothing yet has been heard as to prices for standard rails for 1925 delivery, but recent inquiries of the New York Central Lines and of the Western railroads are expected to develop whether or not present prices are to hold. Light rail business still is of very moderate proportions; coal mine activities are on a larger scale, but the increase is not yet pronounced and coal prices are not so profitable as to encourage purchases of supplies beyond actual requirements. Prices show no change; they are given on page 594.

Tubular Goods.—Demand for pipe still looms large by comparison with other finished products and that also is true of pipe mill operations. Demand for standard pipe is steadily increasing and the fact that the orders usually call for early delivery encourages the idea that jobbers' stocks are depleted and broken. Line pipe business is the other prime contributor to the good mill operations. Oil country goods show up rather poorly in the current shipments, but that is not surprising since the aim of the oil industry is toward bringing the supply down more nearly in line with current demands. Buyers are experiencing no difficulty in securing supplies of the different kinds of pipe as promptly as desired; since there are no indications of higher prices in the near future, the present demand represents real instead of speculative needs. The inquiry for boiler tubes is better than it was a short time ago, but the improvement has not been sufficient to check price cutting. Actual sales prices are well below those indicated by the published card discounts. Discounts are given on page 594.

Cold-Finished Steel Bars and Shafting.—A decided quickening in business is reported by several makers here. The automobile builders are releasing orders with the parts makers and the latter in turn find it necessary to order out unspecified tonnages of screw stock bars. There is a good deal of insistence about early deliveries, suggesting small stocks in consumers' hands. Demands from jobbers are heavier than they were recently, but much room for improvement remains. Production now is about 50 per cent of capacity as compared with 30 per cent in early July. The open market price remains at 2.80c., base, for carload lots of rolled, drawn, polished and turned bars and shafting. Ground shafting in lots of a carload or more is priced at 3.20c., base, f.o.b. mill.

Hot-Rolled Flats.—Prices on wide material are not very well defined, because it can be rolled on skelp and sheet mills as well as on strip mills and as there is not enough business to provide anything like full operation of the different kinds of mills, prices vary a good deal in keeping with the desire for business. When sold on a base price the range is 2.25c. for large tonnages up to 2.50c. for small lots. Hoop sizes range from 2.60c. to 2.75c., with the bulk of the business at or near the lower figure. On bands prices range from 2.50c. to 2.60c., depending on the attractiveness of the order. There has been some gain in business, but none yet claims that it is good. Prices are given on page 594.

Bolts, Nuts and Rivets.—On current demands published quotations are generally maintained, but much of the business on makers' books is on contracts taken well below present quotations. Few buyers have to go outside their contracts in meeting demands upon them. Books for fourth quarter will be opened about Sept. 15, and there are suggestions of further advances on the score that higher prices are necessary to show a profit. Prices and discounts are given on page 594.

Structural Material.—There is no particular change in the situation other than that the fabricating shops in this district are figuring against a good many inquiries and naturally are seeking protection on the steel required. For small tonnages the market still is quotable as high as 2.10c., Pittsburgh, but on the large and important projects the prevailing price is 2c. for the plain material. Prices are given on page 594.

Plates.—Mills in this district are not yet beginning to profit to any extent from the fact that outside mills, notably those in the West, appear better provided with business than was the case recently. Plate capacity in this and nearby districts is not well nor consistently

employed. On small lots the market is quotable at 2.10c., while tonnages of fair size are being accepted as low as 1.90c. Prices are given on page 594.

Iron and Steel Bars.—Fairly steady demand for steel bars is noted, although most of the orders are for small tonnages for early delivery. Bolt, nut and rivet manufacturers and makers of cold finished steel bars are getting heavy orders and their specifications for bars likewise are larger than they were recently. The market is still quotable at 2.10c. to 2.15c. base, Pittsburgh, on the general run of orders. Outside mills shipping into the Pittsburgh district are quoting delivered prices that meet the prices of Pittsburgh mills. Iron bars are slow sale and no more steady in price. Prices are given on page 594.

Sheets.—Orders still are on the increase, and with more makers better provided with bookings than was the case a few weeks ago, price competition is decreasing and what are called regular market prices are finding more general observance. It is not denied that large tonnages are still bringing out price concessions, but on the general run of orders buyers no longer are successful in getting black sheets at less than 3.50c., galvanized under 4.60c., or blue annealed below 2.70c. Operations of independent companies now are about 60 per cent of capacity, while the American Sheet & Tinplate Co. is somewhat above a 50 per cent rate of production, giving the industry as a whole a rate of slightly less than 60 per cent. Prices are given on page 594.

Tin Plate.—Sentiment is helped by increased evidence, in the shape of larger specifications, that container manufacturers did not overpurchase, as was feared a short time ago, when the fruit and vegetable crop prospect was so poor. The leading can making companies exceeded their monthly quotas for July and August and it is expected they will also take out more this month than the original orders called for. This should mean larger mill engagements, since business in other than packers' can sizes continues reasonably good. There is no word yet as to fourth quarter prices, but it is generally assumed the present price of $5.50 per base box on domestic business will continue.

Track Supplies.—Rail makers shared in the recent distribution of spike and tie plate orders by the Pennsylvania Railroad. No other large business has been before the market, which in a broad sense still is quiet. Prices hold at recent levels, but are subject to concessions on large orders. Prices are given on page 594.

Cold Rolled Strips.—Business shows material betterment with makers in this district, particularly from the stamping trade, and prices are slightly stronger. On tonnages of fair size for immediate rolling 4c. base, Pittsburgh, still can be done, but otherwise 4.25c. is the common quotation.

Coke and Coal.—While one contract for furnace coke involving 12,000 tons a month for fourth quarter shipment was placed a short time ago at $3 per net ton at ovens, this is the only one of four or five deals that was closed that low. The others have been at $3.25, and in view of the stronger tendency in pig iron, to say nothing of a definitely better market in coal, producers now are very firm at that figure. Some of the contracts closed carry a proviso that in the event of an increase in wages the purchaser shall stand it. This, however, is not regarded as a serious possibility, since there are doubts that the Connellsville district will be so pressed for supplies or for men over the remainder of the year as to make necessary any change in wages. The spot furnace coke market also is slightly firmer. Supplies for immediate shipment still can be bought at $3, but for tonnages for specified shipment over two weeks to a month $3.10 now is the usual figure. Spot foundry coke holds at $4 to $4.50, with most of the business at $4 to $4.25. Coal prices finally have begun to respond to increased domestic demands and to a greater demand from industrial sources. We now quote mine run steam coal at $1.60 to $2.10 per net ton at mine; coking grade at $1.75 to $1.85 and gas from $2 to $2.25. These prices are up 10c. to 25c. from recent levels. Steam slack commands $1.20 to $1.30 and gas slack $1.30 to $1.40.

Old Material.—Offerings of heavy melting steel at less than $18 are fewer and while mills in this district have been able in the past week to pick up a few small tonnages at $17.50, they are finding the competition from dealers greater than it was recently, due to the fact that sales of this grade have been made at $18, Steubenville, and dealers will pay $17.50 for that delivery. The market also is strengthened by the fact that sales of heavy melting grade have been made in the East at $18, which would divert shipments originating in the East away from Pittsburgh. Outside points to the West are paying more remunerative prices than rule here. Development of a demand here therefore would likely send local prices up with a rush; some reference is heard to a $20 market for steel works scrap, but from what is known of the cost of dealers' yard stocks it is doubtful if much material would come out at that price and local consumers would have to bid up close to $20 to secure supplies away from other consuming centers. Fair-sized sales of blast furnace grades have been made at $15, Steubenville. A local tin plate company recently disposed of its compressed sheet scrap at $15.40, its mills, which would mean $16.80 delivered at the nearest consuming plant without profit to the dealer. No sales of this grade yet are noted above $16.50, but with heavy melting steel at $18, compressed sheets should command about $17.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$17.50 to $18.00
No. 1 cast, cupola size	18.00 to 18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.50 to 19.50
Compressed sheet steel	16.00 to 16.50
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	20.00 to 20.50
Railroad coil and leaf spring	20.00 to 20.50
Low phosphorus blooms and billet ends	22.00 to 22.50
Low phosphorus plate and other material	21.00 to 21.50
Railroad malleable	16.00 to 16.50
Steel car axles	20.00 to 20.50
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	20.00 to 20.50
Machine shop turnings	14.00 to 14.50
Sheet bar crops	18.00 to 18.50
Heavy steel axle turnings	15.00 to 15.50
Short shoveling turnings	14.50 to 15.00
Heavy breakable cast	16.00 to 16.50
Stove plate	13.50 to 14.00
Cast iron borings	14.50 to 15.00
No. 1 railroad wrought	15.00 to 15.50
No. 2 railroad wrought	17.50 to 18.00

Silica Brick Prices Are Lower

PITTSBURGH, Sept. 1.—Larger producers of silica brick, who hitherto have been holding at $38, f.o.b. Pennsylvania works, and $47 for Illinois brick, recently reduced prices $3 per 1000 and now are quoting Pennsylvania brick at $35 and Illinois at $44. This reduction is made to meet competition of small producers, who for some time have been taking business in Pennsylvania brick at $35 and in a few cases at even less. Birmingham price of silica brick remains at $50, competition in the South apparently being less than in the North. No change is noted in prices of other kinds of refractories. Business generally is a little better than it was recently. Increased steel works operations are responsible for the improvement in clay fire and silica brick business. Prices are given on page 595.

Manufacture of lead pipe and bar and sheet lead in 1923 is reported by the Census Bureau at 85,141,690 lb. of pipe and 34,246,044 lb. of sheets, with a total value for all products of $19,294,655, compared with $10,473,575 in 1921. Returns are from 29 establishments, employing 861 wage earners in 1923 and 882 in 1921.

Chicago

Railroad Equipment Business the Feature—Also Better Automobile Demand

CHICAGO, Sept. 2.—Railroad car buying is the center of interest in this market. The Chesapeake & Ohio has placed orders for 1987 hopper bottom gondola bodies, and there remain 15,400 cars pending, the largest number on inquiry since last spring. Included in this total are 6000 box and automobile cars on which the Pennsylvania has just asked figures. Rail purchases also promise to be large, with the New York Central coming into the market for 150,000 to 175,000 tons and the Illinois Central for 60,000 tons. The Gulf Coast lines is inquiring for 5000 tons.

Structural lettings for the week bulk large, totaling 10,500 tons. Demand from the farm implement industry is steadily improving, but indications are that prospective farmer buying has been overestimated. Undoubtedly a considerable portion of the proceeds from this year's harvest will be required to liquidate past indebtedness. More encouraging reports come from the automobile centers. The Studebaker and Buick companies have placed sizable orders for steel and the Ford company is also expected to enter the market in a larger way. All factors considered, the trend of steel business continues upward and, while progress is slow, it is steady.

Slight gains have been made in mill operations, but efforts to hold these gains have resulted in a continuance of sharp competition. Prices are erratic and, in some commodities, are definitely lower than heretofore. Steel works operations for the entire district probably average 55 per cent. A number of independents are on a 60 to 70 per cent basis, while another large interest is running at a 44 per cent rate. The status of steel-works blast furnaces is unchanged.

Ferroalloys.—Quotations of $90, seaboard, on ferromanganese have been withdrawn, and the lowest

We quote 80 per cent ferromanganese, $102.56, delivered; 50 per cent ferrosilicon, $75, delivered; spiegeleisen, 18 to 22 per cent, $40.56, delivered.

Pig Iron.—The market situation is steadily improving, although lacking in spectacular features. At no time in August was buying notably active; yet sales totals for the month show the largest tonnage booked since early in the year. Buyers have bought conservatively and in some cases have come into the market a second time. A farm implement company which has closed for its estimated needs found it necessary to buy 800 tons of foundry additional during the current week. It is believed the many other melters who have bought the fourth quarter will have to place additional orders as their operations improve. A local user has closed for 1000 tons of foundry for first quarter, but this transaction is an exception, as producers have not yet decided on a definite policy to govern sales for that period. The present market is regarded as too low to warrant extensive sales that far ahead, particularly when the trend of prices appears to be upward. Among consumers, manufacturers of radiators and sanitary ware are operating at a good rate, although not so well as a year ago. Encouraging news comes from the automobile industry. Surplus cars to a large extent have been disposed of, and automotive foundries are operating at a fair rate for the first time in three months. Two western Michigan melters serving the motor car industry have closed for 2000 and 500 tons of foundry iron respectively. These tonnages, however, were placed with a Lake Erie producer at $19, base furnace. A Michigan stove maker has placed 200 tons of high silicon foundry with a southern furnace. A melter in the Chicago metropolitan district has closed for 100 tons each of northern and southern foundry. One of the best gages of current melt lies in shipments from furnaces, and these showed a marked improvement in August over July. Charcoal iron is quiet and silvery remains weak, particularly in the higher grades. A large local interest is inquiring for 200 tons of fluorspar.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$20.50
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00
Malleable, not over 2.25 sil.	20.50
Basic	20.50
High phosphorus	20.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	22.18
Southern No. 2, sil. 1.75 to 2.25	$23.51 to 24.01
Low phos., sil. 1 to 2 per cent, copper free	31.70
Silvery, sil. 8 per cent	34.29 to 35.29
Electric ferrosilicon, 14 to 16 per cent	43.42

Plates.—Inquiries for plates, shapes and bars received during the week total 112,000 tons, the largest to come before the trade since last spring. A considerable portion of this is represented by inquiries from car builders who are figuring on pending railroad car business. The Chesapeake & Ohio has placed orders for 2000 gondola car bodies; in addition there are 15,400 freight cars in the market, including a fresh inquiry from the Pennsylvania for 6000. The Standard Steel Car Co. has assigned to its Hammond, Ind., shops the construction of 50 passenger cars recently ordered by the Baltimore & Ohio for the Staten Island Railroad. Improvement in the demand for plates has made competition even keener than heretofore and prices are erratic, with 2.10c., Chicago, a commoner figure on desirable tonnage.

The mill quotation is 2.10c. to 2.15c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—With the placing of two large projects, the United Masonic Temple, Chicago, requiring 5500 tons, and the Great Northern dock, Allouez, Wis., 4000 tons, the week's lettings bulk large, totaling 10,369 tons. The largest new prospect is a plant addition for the Crane Co., Chicago, 3000 tons. Revised figures have been asked on the Lake Shore Athletic Club building, Chicago, 7500 tons. Competition between fabricators is sharp and plain material prices are unsteady, with 2.10c., Chicago, more commonly quoted on attractive business.

The mill quotation on plain material is 2.10c. to 2.15c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Demand for soft steel bars shows steady, though gradual, improvement, but it is apparent that some business continues to be held back pending the stabilization of prices. Bars, however, are stronger than some other finished steel commodities, and appear to be steady at a minimum of 2.10c., Chicago. The implement industry is increasing its purchases and better reports come from automobile manufacturing centers. Both the Buick and Studebaker companies have made liberal purchases of various steel requirements, and the Ford company is also expected to enter the market for an interesting tonnage. Bar iron mills are booking more business and look for still further improvement as the railroads carry out their enlarged program of purchases. The Republic mill at East Chicago resumed operation last Wednesday after a four-day shutdown. Rail steel bar mills are profiting by the expanding purchases of farm implement makers, as well as improved demand from other sources.

Mill prices are: Mild steel bars, 2.10c. to 2.15c.; common bar iron, 2.15c. to 2.20c., Chicago; rail steel, 2c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.20c. to 2.30c.

Sheets.—Prices are still weak and current demand does not measure up with that for the heavier commodities. In comparison with June and July, however, present buying is improved, although in view of the small size of orders, the number of sales shows a more marked increase than the tonnage involved. The operations of the local independent are on a 50 per cent basis.

Mill quotations are 3.50c. for No. 28 black, 2.70c. for No. 10 blue annealed, and 4.60c. for No. 28 galvanized, all being Pittsburgh prices subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 3.80c. for blue annealed; 4.50c. for black, and 5.50c. for galvanized.

Wire Products.—An encouraging tonnage continues to be booked, with demand from both jobbers and manufacturing users. That consumption is increasing is indicated by the fact that there is still little buying for stock and, in most cases, material is going with practically no interruption directly into the hands of ultimate users. Improved demand is to be noted in all districts, but is particularly noteworthy in Texas, Louisiana, Alabama and some parts of Arkansas, where farmers have cashed in on their crops. Among the common products, nails are in good demand, while the call for barbed wire is picking up. Fence buying is improving, but not as rapidly as was expected for this period. Mills are still in a position to make prompt shipments and this fact, together with the unsteadiness of the market, is preventing purchases for stock. Mill prices, which are still weak, are shown under finished iron and steel, f.o.b. Pittsburgh, page 594. Producers continue to draw upon their stocks, while their operations remain at approximately 50 per cent.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.70 per 100 lb.; extra for black annealed wire, 15c. net 100 lb.; common wire nails, $3.55 per 100 lb.; cement coated nails, $2.80 per keg.

Rails and Track Supplies.—The Gary rail mill starts up today following the receipt of specifications against contracts. Among the lines which have specified is the Illinois Central, which has released 14,000 tons for rolling. This road is also coming into the market for 60,000 tons additional.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 2.10c., f.o.b. makers' mill.

Standard railroad spikes, 2.80c. to 3c. mill; track bolts with square nuts, 3.80c. to 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.45c. base, and track bolts, 4.45c. base.

Bolts and Nuts.—Specifications from jobbers and others are fair and bolt makers are holding firmly to their new quotations. In fact, there is some talk of another advance. The present market is on the basis of 60 and 20 per cent off, Chicago, for large machine bolts.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 60 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 55 off; hot pressed nuts, squares and hexagons, tapped, $4 off; blank nuts, $4 off; coach or lag screws, gimlet points square head, 65 per cent off.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Co. has booked 400 tons for Lincoln Park, Mich., and the American Cast Iron Pipe Co. is low bidder on 100 tons of fittings for Chicago. Western Springs, Ill., will receive general contractors' bids Sept. 5, on new water mains to cost $100,000. Demand from small municipalities, which is usually a feature at this season, is below expectations. Active buying is under way, however, for automatic sprinkler systems in buildings now approaching completion. Inquiries from the larger cities and industrial companies are notably few. Prices have shown no further change.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $56.20 to $57.20; 6-in. and over, $52.20 to $53.20; Class A and gas pipe, $5 extra.

Reinforcing Bars.—Concrete bar dealers are confronted with a sharp decline in both large and small lettings. Action on a number of projects has been postponed, while others have been withdrawn from the market. Likewise new inquiries are few. This contraction in the volume of business is interpreted as being a reflection of price weakness rather than any positive decline in the volume of building operations. In other words, a recovery is looked for as soon as the steel market becomes steadier. The general quotation on concrete bars is 2.25c. to 2.30c., Chicago warehouse, but considerable business has gone at as low as 2.20c. The Kalman Steel Co. has been awarded 725 tons for a power plant to be built at Lenox, Ind. Projects for which bars will be bought include a plant addition for the Crane Co., Chicago, 400 tons, and the United Masonic Temple, Chicago, 300 tons. Revised figures have been asked on the Lake Shore Athletic Club building, Chicago, involving 300 to 500 tons. The Concrete Steel Co. has the contract for 270 tons for the Hotel Sherman annex, Chicago.

Old Material.—Prices continue to exhibit an upward tendency with trading somewhat more confident and consumer buying more general. Dealers are offering $16 per gross ton, deliverd, for heavy melting steel, and one of the smaller users has bought at $16.25, while the leading consumer is expected to place a substantial tonnage shortly. An important factor contributing to buoyancy in basic open-hearth grades is a heavy short interest among leading dealers. That the trade is now speculating on further advances is indicated by attractive prices paid for railroad material. Railroad offerings this week are heavy, including: the Pennsylvania, 29,000 tons; the New York Central, 12,000 tons, of which 8100 tons is No. 1 rail; the Illinois Central, 5000 tons; the Chicago & North Western, 4100 tons; Chicago & Alton, 1200 tons; Crane Co., 750 tons (borings); Standard Oil Co., Whiting, Ind., 600 tons; Baltimore & Ohio Chicago Terminal, 450 tons, and Michigan Central, blank list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$17.50 to $18.00
Cast iron car wheels	18.00 to 18.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	18.75 to 19.25
Railroad tires, charging box size	18.75 to 19.25
Railroad leaf springs, cut apart	18.75 to 19.25
Rails for rolling	16.50 to 17.00
Steel rails, less than 3 ft	18.00 to 18.50
Heavy melting steel	16.00 to 16.50
Frogs, switches and guards cut apart	16.00 to 16.50
Shoveling steel	15.50 to 16.00
Drop forge flashings	11.00 to 11.50
Hydraulic compressed sheets	13.00 to 13.50
Axle turnings	13.50 to 14.00
Steel angle bars	17.50 to 18.00
Steel knuckles and couplers	18.75 to 19.25
Coil springs	19.50 to 20.00
Low phos. punchings	17.00 to 17.50
Machine shop turnings	9.50 to 10.00
Cast borings	11.25 to 11.75
Short shoveling turnings	11.25 to 11.75
Railroad malleable	17.50 to 18.00
Agricultural malleable	16.00 to 16.50
Per Net Ton	
Iron angle and splice bars	17.00 to 17.50
Iron arch bars and transoms	18.00 to 18.50
Iron car axles	24.50 to 25.00
Steel car axles	18.00 to 18.50
No. 1 busheling	12.00 to 12.50
No. 2 busheling	8.50 to 9.00
Pipes and flues	10.50 to 11.00
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	14.25 to 14.75
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	17.00 to 17.50
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	16.50 to 17.00
Stove plate	14.50 to 15.00
Grate bars	15.00 to 15.50
Brake shoes	15.00 to 15.50

The first number of *Current News*, a monthly publication of the Electric Controller & Mfg. Co., Cleveland, has been issued. It is made up of four pages, 12 x 17 in., five columns to the page, and in general appearance resembles a newspaper. News is given of unique installations of the electrical control equipment manufactured by the company, each item being illustrated. News items are well written and the make-up is attractive. The purpose of the paper, as stated frankly by the publishers, is to bring the company's name and its products to the attention of a wide circle of readers, by pointing out how the products of the company are being used in various industries, to aid in the solution of similar problems elsewhere.

New York

Large Inquiry for Tin Plate—Sales of Norwegian Ferromanganese

NEW YORK, Sept. 2.—The past week, with its double holiday, and with vacation absences at the maximum for the summer season, has been probably the barest of the year in pig iron. Foundries have no immediate prospect of an increased rate of operations, but quite a number in this and nearby districts have yet to buy their iron for the moderate consumption to which they look forward in the next two or three months. In the New Jersey district the largest current inquiry is for 500 tons—300 tons of No. 1X and 200 tons of No. 3—for delivery in the next three months. A western New York railroad equipment foundry has yet to buy 1500 tons of malleable grades recently inquired for. The usual base price of eastern Pennsylvania furnaces is still $20.50, and offerings of Buffalo iron in the East are for the most at $19, furnace, for No. 2 plain. No change has been made in the list of active furnaces in eastern Pennsylvania and New Jersey, but Standish furnace, in eastern New York, producer of low phosphorus pig, has gone out. Colonial furnace, at Riddlesburg, Pa., is soon to go in blast.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$22.27 to $22.77
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.27 to 23.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.77 to 23.27
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
No. 2 Virginia, sil. 1.75 to 2.25	29.94 to 30.44

Ferroalloys.—Conditions in the ferromanganese market are somewhat chaotic as to prices at which the alloy can be purchased. The prevailing price is $95 for both the British and domestic alloys, seaboard basis, but the fact that within the last two weeks substantial quantities have changed hands at as low as $90 for both kinds of alloy makes it uncertain whether or not these lower prices can still be realized. The alloy is now also available from another source, namely, the product of the company which is producing ferromanganese in its electrolytic furnaces in Norway. This company, which is the Electro Metallurgical Co. of New York, reports sales of several large lots of the alloy from its Norwegian furnaces in the last week or ten days. It is reported that one producer in England has broken away from any understanding which may have prevailed among producers there and may be aggressive in the American market. The spiegeleisen market remains very quiet at unchanged prices.

Cast Iron Pipe.—Three municipal inquiries have come out for small sizes and there continues to be a fair volume of private transactions in water pipe. The boroughs of Bronx and Queens, New York, are asking quotations on 6, 8 and 10-in. pipe, each tender to cover about 1000 tons. Awards are to be made in a few days. Makers are still granting concessions, but last week's quotations prevail. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $56.60 to $57.60; 4-in. and 5-in., $61.60 to $62.60; 3-in., $71.60 to $72.60, with $5 additional for Class A and gas pipe. Jobbers' stocks of soil pipe are about at normal, according to general estimates, and operations in the mills are still on a reduced basis. There is only a moderate demand and some makers are said to be offering concessions. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows: 6-in., 45 to 46¼ per cent off list; heavy, 55 to 56¼ per cent off list.

Warehouse Business.—Little change is seen, but the opinion is pretty general that the slight increase in business of the last few days is a forerunner of a greater advance not far ahead. Prices remain firm at last week's levels. What dullness exists seems most pronounced in structural materials, one large interest having felt an abrupt decline in demand. With tire steel and toe-calk steel some improvement is apparent and activity points up. Cold-rolled shafting holds firm, but it is the opinion of one maker that the market is in a liquid state and may shift in either direction. Nearly everywhere demand is better than it was one month ago. We quote prices on page 610.

Finished Iron and Steel.—In spite of the seasonally dull week preceding Labor Day, bookings throughout August were maintained at the improved rate realized in the first part of the month, and today, Sept. 2, bore evidence of a progressively increasing demand. It seems likely that August business volume was fully 50 per cent more than that of July. The largest single item of new business was 100,000 base boxes of tin plate for the Texas Co. about to be settled at this writing for delivery more or less regularly over the remainder of the year. Prices appear firm at the recently established quotations, except that an attractive order of plates of the sizes or qualities carrying good extras could be placed at less than 1.70c., Pittsburgh base, with tank quality none too strong at 1.70c. Summed up, the situation shows further crystallization toward a condition in which when large opportunities appear, heavy bookings will occur at some slight concession from the existing levels, thus marking, as is usually the case, the definite turning of the market price curve.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.49c.; plates, 2.04c. to 2.14c.; structural shapes, 2.34c. to 2.44c.; bar iron, 2.34c. to 2.44c.

Old Material.—There has been very little buying by consumers in the past week, and the principal activity of the market is in purchases by brokers to fill contracts. Prices are the same as quoted a week ago.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$13.00 to $13.50
Heavy melting steel, railroad or equivalent	14.00 to 14.50
Rails for rolling	14.50 to 15.00
Relaying rails, nominal	24.00 to 25.00
Steel car axles	17.50 to 18.50
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	8.75 to 9.25
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (clean)	9.50 to 10.00
Machine shop turnings	9.50 to 10.00
Mixed borings and turnings	7.50 to 8.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.25 to 12.75
Stove plate	11.50 to 12.00
Locomotive grate bars	11.50 to 12.50
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	14.50 to 15.00
No. 1 heavy breakable cast	12.50 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$15.00 to $15.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	13.00 to 13.50
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 12.50

Detroit Old Material Market

DETROIT, Sept. 2.—The recent letting by one of the largest producers of approximately 6000 tons of miscellaneous waste material for September delivery showed some slight fluctuations in price in blast furnace materials. Borings registered a decline of 50c. per ton, while short turnings were sold as low as $12. Regular hydraulic compressed and shoveling steel have been more in demand and show advances over prices of a week ago.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting steel	$14.50 to $15.50
Shoveling steel	14.50 to 15.50
Borings	11.50 to 12.50
Short turnings	11.00 to 12.00
Long turnings	10.00 to 11.00
No. 1 machinery cast	15.50 to 17.00
Automobile cast	17.50 to 18.50
Hydraulic compressed	12.25 to 13.25
Stove plate	13.50 to 14.50
No. 1 busheling	12.00 to 13.00
Sheet clippings	8.00 to 9.00
Flashings	10.50 to 11.50

Birmingham

Expansion in Steel Operations and Preparations for Larger Iron Output

BIRMINGHAM, Sept. 2.—Two blast furnaces are ready to go into operation, two others are under repairs and a fifth one is about to be overhauled—a situation offered as looking to an improved pig iron market in the district. Despite the fact that there are more than 100,000 tons of iron in stock piles in this State and that buying recently has been no more than production, furnace interests feel confident that fourth quarter buying is soon to be taken up and that there will be need for greater make. Quotations are a little firmer this week, no willingness to sell at $17.50 being expressed, No. 2 foundry being held for $18 and $18.50, except it be in a small lot and for melt in the immediate neighborhood. Just prior to the past week reports were current that several 1000-ton lots had been booked and one above 5000 tons. Very little is said of the larger tonnage sales. The smaller furnace interests are asking $18.50 per ton for iron for fourth quarter delivery. The activity in iron melting is credited to the cast iron pipe industry, both gas and water and the soil pipe producers, and to the radiator works, the stove foundries, machine shops and foundries and others.

We quote per gross ton, f.o.b. Birmingham district furnace as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$17.50 to $18.00
No. 1 foundry, 2.25 to 2.75 sil.	18.00 to 18.50
Basic	18.50 to 19.00
Charcoal, warm blast	30.00 to 31.00

Cast Iron Pipe.—Lettings are being received almost daily. Practically all business coming in now is carrying instructions to deliver as quickly as possible. There has been no stock on hand at pipe plants for some time and tests of pipe are made promptly in order that the product may be started to destination as quickly as possible. Quotations are being maintained, generally speaking, though reports still continue as to concessions. The soil pipe market is improving steadily. The Agricola and Gadsden shops at Gadsden, which were taken over recently by the Alabama Pipe Co., have resumed operations after two weeks of idleness for inventory. Other soil pipe shops are speeding up under a little impetus in the demand. The two shops of the Birmingham Machine & Foundry Co. in Birmingham have received some new business that warrants a better output.

Finished Steel.—Expansion of operations in wire and nails by placing more men to work in the plant of the Gulf States Steel Co. at Gadsden brought about some comment. The open hearth furnace operations, however, remain about the same, on a 50 per cent capacity operation. The plants of the Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. here, continue the pace heretofore stated, with a little heavier movement of wire and nails. The tank plants of Birmingham reiterate the report that there is good business in hand. Steel fabricating plants also report work on books urging steady operation. Steel bars are quoted at 2.25c. to 2.35c.

Coke.—The market in the Birmingham district continues dull, sales being in small lots. Some firming up is noted as to foundry coke, by-product first class foundry bringing $5.25 per ton. Some coke has been selling at $5 and lower. No further readjustment of make has taken place recently. Some independent producers, are holding at $5.25 as minimum. Beehive coke holds a certain class of users, who take a steady amount all the time. Hope is expressed by coke producers that on the turn for the better in the pig iron market there will be better demand for coke.

Old Material.—Quotations showed no change but the scrap market in the Birmingham district is described as slightly better again. Consumers of heavy melting steel are requiring delivery at place of consumption at prices in the table. Steels are stronger in the scrap list than the cast and wrought scrap, though several of the pipe shops have been inquiring again for No. 1 cast.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	12.50 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	12.50 to 13.00
No. 1 cast	15.00 to 16.00
Tram car wheels	15.00 to 16.00
Car wheels	14.00 to 15.00
Stove plate	14.00 to 15.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	7.00 to 8.00
Rails for rolling	15.00 to 16.00

Buffalo

Some Reduction in Pig Iron Stocks—Week Generally Featureless

BUFFALO, Sept. 2.—Due probably to the effect of the advanced prices and the Labor Day holiday combined, the pig iron market has been somewhat quieter than it was over the previous week. In the face of the buying hesitation, producers appear to preserve a firm attitude on the $19.50 base, though there are some reports that lower-priced iron from Buffalo has been offered. It is known that one interest has declined to take an acceptable lot of 2.25 to 2.75 per cent silicon at less than $20, thus maintaining the differential. It was in connection with similar negotiations that a prospective purchaser said that $19 could be done locally on 2.25 to 2.75 silicon. Inquiry is down to 5000 tons total with a 500-ton lot from the central part of the State, apparently the largest. Foundry iron in the New York Air Brake inquiry of two weeks ago, amounting to 3000 tons, is said to have been placed at $19, Buffalo, or Buffalo district. On last week's inquiries of 20,000 tons, one Buffalo producer was able to book 10,000 tons embracing possibly 50 orders. Furnace interests are cutting into their piled iron quite considerably, but a quantity remains to be disposed of. The Lackawanna plant of the Bethlehem Steel Co. is operating two furnaces; the Donner Steel Co., two; Hanna Furnace Co., one, and Rogers-Brown Iron Co., one.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, silicon, 1.75 to 2.25	$19.50
No. 1 foundry, sil. 2.75 to 3.25	$20.50 to 21.00
No. 2 foundry, sil. 2.25 to 2.75	19.50 to 20.00
Malleable, up to 1.75 sil.	19.00
Malleable, sil. 1.75 to 2.25	19.50
Lake Superior charcoal	29.28

Finished Iron and Steel.—Business with local fabricators of structural steel is much better than it has been with considerable new projects in hand. Some pending school jobs have gone through and some additional work throughout the State has come to local shops. One of the notable projects was a six-story addition to the Lafayette Hotel which will require 250 tons of steel. Mills rolling bars are gradually increasing their operations and wire mills have been affected by a better business attitude. Inquiries still remain low in tonnage but are more numerous. Bar price appears firm at 2.15c. Sheet business is improving.

Steel bars, 2.30c.; iron bars, 2.35c.; reinforcing bars, 2.30c.; structural shapes, 2.40c.; plates, 2.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.35c.; bands, 4.05c.; hoops, 4.40c.; cold finished rounds, 4.20c.; cold-finished shapes, 4.70c.

Old Material.—The market preserves its newly acquired strength, but mills are refusing to pay the dealers' prices, and with present low percentage of operation feel that their present supplies are sufficient to last them. Average operation is around 30 per cent. The price idea among the mills for heavy melting steel is $15.50 to $16.50, while the dealers declare that 10,000 tons cannot be bought for less than $18. Mills believe that 10,000 tons could be bought if necessary for $16.50. They want to pay about $1.50 less for No. 1 busheling than for heavy melting steel. Dealers on the other hand believe

the market will increase in strength and are buying accordingly, many of them paying comparatively high prices to fill old orders. A more active market is expected this week, with additional mill operation.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.00 to $17.00
Low phosphorus, 0.04 and under	19.00 to 19.50
No. 1 railroad wrought	15.00 to 15.50
Car wheels	15.50 to 16.00
Machine shop turnings	11.50 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	14.50 to 15.50
Stove plate	16.00 to 16.50
Grate bars	15.00 to 15.50
Bundled sheets	12.00 to 12.50
Hydraulic compressed	15.50 to 16.00
Railroad malleable	17.00 to 18.00
No. 1 machinery cast	17.00 to 18.00

St. Louis

Dull Week, with Better Inquiries for Iron, Steel and Scrap

ST. LOUIS, Sept. 2.—The week has been quiet, neither maker nor melter making any effort to do any business. The market contines firm, with no change in prices. A fair volume of new business has been booked by foundries specializing in gray iron castings, and a distinct improvement is reported in the demand for stoves, farm implements and other goods for use in the country. The principal sale of the week, 2000 tons of basic, was made by the St. Louis Coke & Iron Co. to a St. Louis melter for prompt shipment. The same maker sold 1000 tons of basic to an east side melter. An upper Illinois melter wants 250 to 300 tons of foundry iron, an East St. Louis melter wants 250 tons of malleable and a Kansas City melter has inquired for prices on 100 to 150 tons of foundry iron.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$21.16 to $21.56
Northern malleable, sil. 1.75 to 2.25	21.16 to 21.56
Basic	21.16
Southern fdy., sil. 1.75 to 2.25 (rail)	23.17 to 23.67
Southern fdy., sil. 1.75 to 2.25 (rail and water)	21.28 to 21.78
Granite City iron, sil. 1.75 to 2.25	21.81 to 22.31

Finished Iron and Steel.—Demand continues to show improvement. A substantial increase in orders and inquiries is reported, and there is generally a better feeling. No large orders are being received and buyers are still more or less cautious, but the volume of business placed is fairly satisfactory. The market is firm. Mills would like to advance prices, but will not do so for fear it may arrest the present buying movement.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled one pass, 5c.; cold rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, $\frac{7}{8}$-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Coke.—The market was quiet during the week. However, there are more inquiries for both domestic and foundry grades. Dealers are beginning to look after their requirements for the coming season.

Old Material.—The market shows further strength, and prices have advanced 50 cents to $2 a ton. A substantial purchase of rails by a west-side concern caused the advance. Heavy melting steel, frogs, switches and guards cut apart, cast iron borings, No. 1 busheling, machine shop turnings and champion bundle sheets are also higher. Most consumers in the district are dickering with dealers, who expect that substantial purchases will be made within the next week or ten days. A Missouri Pacific list of 3000 tons closed last Friday. Pending lists include: Pennsylvania System, 28,000 tons; Chicago & Alton, 200 tons; Big Four, blind list; Illinois Central, 5000 tons; Chicago, Burlington & Quincy, 5000 tons of relaying rails; St. Louis Southwestern, 400 tons and Mobile & Ohio, 1500 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	$16.00 to $16.50
Rails for rolling	17.75 to 18.75
Steel rails less than 3 ft.	19.00 to 19.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	17.00 to 17.50
Heavy melting steel	15.00 to 15.50
Heavy shoveling steel	15.00 to 15.50
Frogs, switches and guards cut apart	17.00 to 17.50
Railroad springs	20.00 to 20.50
Heavy axles and tire turnings	11.50 to 12.00
No. 1 locomotive tires	17.00 to 17.50

Per Net Ton

Steel angle bars	16.00 to 16.50
Steel car axles	19.00 to 19.50
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	17.50 to 18.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	14.00 to 14.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	12.00 to 12.50
No. 1 railroad cast	17.00 to 17.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	14.00 to 14.50
Machine shop turnings	7.50 to 8.00
Champion bundled sheets	8.00 to 8.50

Boston

Foundries Are Slow in Covering on Fourth Quarter Iron Requirements

BOSTON, Sept. 2.—Pig iron sales the past week fell off further. In the aggregate they were not more than 4000 tons. They included small lots of eastern Pennsylvania No. 2X at $21 and $21.50, furnace; No. 1X at $21.50 and $22; Lake charcoal at $26, furnace base; western Pennsylvania No. 2X at $22.50; Buffalo No. 2X at $20 and No. 1X at $20.50 and $21.50; and Indian iron at about $21 on dock here, duty paid. The largest open inquiry in the market today is for 150 tons No. 2X from a Rhode Island melter. The backwardness of foundries in covering for fourth quarter requirements is the subject of more or less comment in the local pig iron trade. Due to the low ratio of operation at most New England foundries, there is the possibility, unless business materially improves within the next fortnight, of a majority of the melters having enough stock on hand or on order to last them well into October or November. It is because of the uncertain business outlook that foundries are holding back.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$24.15 to $25.15
East. Penn., sil. 2.25 to 2.75	24.65 to 25.15
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
Buffalo, sil. 2.25 to 2.75	24.41 to 24.91
Virginia, sil. 2.25 to 2.75	30.42 to 31.42
Alabama, sil. 1.75 to 2.25	27.60

Coke.—Firmer prices for foundry coke in other sections of the country are not reflected in New England. Both the New England Coal & Coke Co. and the Providence Gas Co. announced the September price on by-product coke to apply to last half contracts is $11.50 a ton, delivered in New England, the same price prevailing the two previous months. September specifications for coke against contracts to date are light, in some instances even lighter than in August. Because of the limited movement of foundry coke from ovens to consumers, fuel makers are operating the major number of their ovens on domestic sizes.

Old Material.—Heavy melting seel and railroad malleable iron prices in this market are easily 50c. a ton higher, and pipe 25c. Shafting also has appreciated in value 50c. These advances are due more to the strength in outside markets than to any increase in demand here. There is, however, a slightly freer movement of heavy melting steel to eastern Pennsylvania points. Buying otherwise is confined to car lots, but covers a wide range of material. Machine shop turnings, cast iron borings and mixed borings and turnings are especially difficult to obtain, due to the

comparative inactivity of New England machine shops. Bids close today on 1515 tons of miscellaneous material offered by the Boston & Albany Railroad, including 500 tons of rails for rerolling, for which there is a demand in this market. On Thursday the General Electric Co., West Lynn, Mass., will close bids on several hundred tons of miscellaneous material.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.50 to $20.00
No. 2 machinery cast	16.50 to 17.00
Stove plates	15.00 to 15.50
Railroad malleable	17.00 to 17.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.50 to $13.00
No. 1 railroad wrought	14.00 to 14.50
No. 1 yard wrought	13.00 to 13.50
Wrought pipe (1-in. in diam., over 2 ft. long)	12.00 to 12.50
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	9.00 to 9.50
Blast furnace borings and turnings	8.50 to 9.00
Forged scrap and bundled skeleton	9.00 to 9.50
Shafting	19.00 to 19.50
Street car axles	18.50 to 19.00
Rails for rolling	13.50 to 14.00

Cincinnati

Numerous Small Orders for Pig Iron for Nearby Shipment

CINCINNATI, Sept. 2.—The pig iron market was devoid of features last week, the business done being confined to small tonnages. Sales of this character were more numerous, however, and the aggregate tonnage booked was up to the average for the past few weeks. Prices remain about the same as last week. The $20, furnace, price in southern Ohio is more firmly established, though there is resale iron to be had at $19.50. In the South $17.50 is the prevailing quotation, though some furnaces will not accept fourth quarter business at less than $18, Birmingham. There have been reports of $17.25 having been quoted, but these are not confirmed. Concessions of $1 per ton continue to be the rule in silvery irons. There has been no demand for basic or Bessemer grades. Inquiry is light and mostly for nearby shipment.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	$21.55 to $22.05
Southern fdy., sil. 2.25 to 2.75	22.05 to 22.55
Southern Ohio silvery, 8 per cent	31.77
Southern Ohio fdy., sil. 1.75 to 2.25	21.77 to 22.27
Southern Ohio, basic	21.27
Southern Ohio malleable	21.77 to 22.27

Sheets.—Low prices continue to be quoted at Southern points, but in this district, the market appears to be firmer. Orders are of the fill-in variety, and prices generally quoted are 2.70c. for blue annealed, 3.50c. for black and 4.60c. for galvanized. It is possible, however, on attractive orders, to shade these prices at least $1 a ton

Tin Plate.—Can makers in this district are running to capacity in an effort to catch up with orders held up by the canning factories. Demand for tin plate as a consequence keeps up well, and the price is steady at $5.50 per base box.

Reinforcing Bars.—Inquiries during the week were for small tonnages, and there were no awards of consequence. Prices are fairly steady at 1.90c. to 2.10c. for hard steel bars, with new steel being quoted at 2.10c. to 2.15c.

Finished Materials.—The market last week was not quite so active as it had been, but nevertheless a fair tonnage was booked. There was very little change in prices, partly due to the fact that tonnages asked for were small, and partly to the fact that there is an inclination on the part of producers to resist further concessions. The largest order reported was for approximately 1300 tons of plates, booked by an Eastern mill from a manufacturer in this district. While the price at which the business was placed was not disclosed, it is said that 1.90c., Pittsburgh, at least was done. A frog and switch manufacturer in this district bought, in addition to a round tonnage of standard rails, plates and shapes, 1000 tons of light rail at a price reported to be below 1.75c., as a number of mills quoting this figure did not share in the business. There was a fair amount of bar business placed at prices ranging from 2.10c. to 2.15c., and plate orders were being booked at 2c. for carload lots. There was only a moderate amount of activity in wire products, and the price of $2.80 for wire nails and $2.55 for plain wire was unchanged. With railroads entering the market for rails, it is expected that there will be inquiries for large tonnages of track accessories, but so far no business has developed.

Warehouse Business.—Local jobbers report that August was the best month since May in the volume of business booked. Orders are for small tonnages, but are more numerous. There is little current activity in wire products, but prospects are better for future business. Prices are unchanged and steady.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, 3.30c.; common wire nails, $3.30 per keg base; cement coated nails, $3 per keg.

Coke.—There is little activity in the coke market and prices are unchanged. Some producers are preparing to put in more ovens in anticipation of better fall demand.

Connellsville furnace, $3; foundry, $4.50; New River foundry, $8.50; Wise County furnace, $3.75; foundry, $4.50; by-product foundry, $6.50, Connellsville basis.

Old Material.—The scrap market is taking on a stronger aspect, and while sales are still rather light, dealers consider the future prospects better and are paying more for old materials to lay down on yards. Some grades have been advanced 50c. to $1 per ton.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton

Heavy melting steel	$14.00 to $14.50
Scrap rails for melting	12.50 to 13.00
Short rails	17.00 to 17.50
Relaying rails	29.50 to 30.00
Rails for rolling	14.50 to 15.00
Old car wheels	13.00 to 13.50
No. 1 locomotive tires	14.00 to 14.50
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.00 to 14.50
Loose sheet clippings	9.00 to 9.50
Champion bundled sheets	11.00 to 11.50

Per Net Ton

Cast iron borings	9.50 to 10.00
Machine shop turnings	8.50 to 9.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	15.50 to 16.00
Iron axles	21.50 to 22.00
No. 1 railroad wrought	11.00 to 11.50
Pipes and flues	8.00 to 8.50
No. 1 busheling	10.00 to 10.50
Mixed busheling	7.50 to 8.00
Burnt cast	10.50 to 11.00
Stove plate	10.50 to 11.00
Brake shoes	12.00 to 12.50

Employment in iron and steel works in July is reported by the Bureau of Labor Statistics, Washington, to have been 5.8 per cent less than in June, the figures from 224 identical establishments showing 254,726 employees in June and 239,907 in July. The shrinkage in payroll was still greater, being 12.9 per cent from $6,832,528 for one week in June to $5,950,777 in July. The reduction in average pay envelope amounted to 7.5 per cent.

The Lincoln foundry at Pittsburgh of the United Engineering & Foundry Co. operated during the first six months of this year 139 out of a possible 154 days, having 489 heats. During all of 1921 the foundry had the same number of heats, and operated 173 out of a possible 308 days. In 1920, it was active 307 out of 308 days, with 1292 heats.

Cleveland

August Fairly Satisfactory in Both Pig Iron and Steel

CLEVELAND, Sept. 2.—August has made a record fairly satisfactory to iron and steel manufacturers, in spite of the fact that the moderate improvement in demand has been accompanied by a decided irregularity in prices of finished materials and only a slight advance in pig iron prices. Sales of pig iron for the month have been of comfortable size. One agency sold 90,000 tons and in addition received specifications amounting to 10,000 tons of long time contracts. The same agency shipped a little more iron than it made and its statistical situation is strong. Sales of finished materials by steel companies were of good volume in January, declined steadily to June and made moderate increases in July and August. With one company the June sales were only one-seventh of those of January, but the August sales were three times those of June. Other companies had similar experience. The largest contract of the week was for 6300 tons of plates and shapes sold by the leading interest to the American Shipbuilding Co. The principal part of this tonnage will go into a new lake vessel to be built for the Pioneer Steamship Co. The steel has been specified and is now being rolled.

Pig Iron.—Sales made a week ago last Saturday but not previously reported amounted to 25,000 tons, of which 10,000 went at $19, furnace, for No. 2 foundry, 10,000 at $19.50 and 5000 at a slightly higher price. Since that time prevailing quotations have been $20, furnace, for outside delivery and $20.50 for local delivery, while Cleveland companies continue to sell Valley iron at $20, furnace, for No. 2 foundry. The largest two inquiries pending are for basic, 5000 being for the United Alloy Steel Corporation, Canton, Ohio, and 5000 for Wheeling Iron & Steel Co. On a sale of a small tonnage of Southern iron the usual price of $17.50, Birmingham, was shaded by a few cents.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	$20.50 to 21.00
Southern fdy., sil. 1.75 to 2.25	23.50
Malleable	20.50
Ohio silvery, 8 per cent	33.52
Stand. low phos., Valley furnace	27.50 to 28.00

Iron Ore.—Shipments from upper Lake docks in August were 6,689,567 tons compared with 7,280,000 tons in July, 1924, and 10,296,133 tons in August, 1923. The ore movement to Sept. 1 this year was 28,796,709 tons compared with 36,892,864 tons to Sept. 1 last year. The estimated movement for the year is 40,000,000 tons.

Semi-Finished Steel.—No transactions are reported in this district, and while it is recognized that Valley companies have sold sheet bars at $37.50 and billets at $37, the sales were for spot delivery and nothing has been done to indicate what contract prices will prevail.

Alloy Steels.—The moderate increase in the activity of the automobile business is reflected in a slight increase in demand for alloy steel and prices which have been rather nominal for some time are now more nearly as represented in the quotations published on page 595 of this issue.

Sheets.—Prevailing prices continue to be 3.50c. for black, 4.60c. for galvanized and 2.65c. to 2.70c. for blue annealed, but the 3.40c. price on black has not disappeared and the price situation is not entirely satisfactory to the sellers.

Bars, Shapes and Plates.—During the past month many projects, including ore unloaders, car dumpers, cranes and other handling equipment calling for considerable tonnages of structural shapes, have been up for figures, but almost nothing of this description has been closed. The Woolworth Building, which has been pending for some time, is being refigured, although the American Bridge Co. was understood to be low on the figures which have just been submitted. New projects include Second National Bank Building, Saginaw, Mich., 2500 tons, and the American Insurance Union Building, Columbus, Ohio, 3500 tons. The usual quotation on structural shapes is 2.10c., Pittsburgh. On tank plates Eastern companies are quoting as low as 1.85c., Pittsburgh, at Erie, Pa., and perhaps even nearer Cleveland. In the immediate Cleveland district 2.10c., Pittsburgh, is the usual quotation, but persistent reports are that in some cases the freight is ignored and Cleveland mills quote low prices. On steel bars, 2.10c. is the prevailing price. Mills are figuring on about 2000 tons of steel for Missouri Pacific locomotives. Sales of the past week include about 3000 tons of cold drawn shafting.

Bolts, Nuts and Rivets.—The increased discounts announced last week on cap and set screws have not had much effect on the market because actual prices which had been made for some time to meet strong competition did not vary greatly from the new schedule. The demand for bolts and nuts is gradually increasing and manufacturers report the situation as fairly satisfactory. They find considerable firmness in the bar market and have not been able to obtain as low prices as they had hoped to get.

Warehouse Business.—Owing to the new through rate of freight of 19c. from Pittsburgh to Cleveland, warehouses which have been selling most products on the basis of 21c., the former freight rate, have begun revision of prices. For example, shapes, plates and bars have been reduced 1c. a 100 lb. A similar revision may be made on other products later in the week. On blue annealed sheets a range of 3.45c. to 3.60c. now represents the market. Prices as revised up to date are given below.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c. hoops and bands, 1 in. and wider and 20 gage or heavier, 3.85c.; narrower than 1 in. or lighter than No. 20 gage, 4.35c.; No. 9 annealed wire, $3.30 per 100 lb.; No. 9 galvanized wire, $3.75 per 100 lb.; common wire nails, $3.40 base per 100 lb.

Coke.—Some complaint is being made in regard to the scarcity of a high grade Connellsville foundry coke, but little business either in foundry or furnace grades is being transacted. For standard Connellsville foundry coke, prices range from $4.50 to $5.50, as for a number of weeks.

Old Material.—Consumers still remain out of the market, but speculation among buyers during the past week resulted in the prices of a number of grades of scrap being advanced 50c. Railroad lists are on the market this week and a large amount of scrap is being disposed of by automobile companies in Detroit. The prices at which these lists are sold will give a better line on quotations than has been had for some time. Borings and turnings are being produced in larger quantities in Detroit as the automobile business increases.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$15.50 to $16.00
Rails for rolling	16.00 to 16.50
Rails under 3 ft	16.75 to 17.00
Low phosphorus melting	17.75 to 18.25
Cast iron borings	14.00 to 14.50
Machine shop turnings	13.50 to 13.75
Mixed borings and short turnings	13.75 to 14.00
Compressed sheet steel	13.75 to 14.00
Railroad wrought	13.50 to 14.00
Railroad malleable	17.00 to 17.50
Light bundled sheet stampings	12.75 to 13.25
Steel axle turnings	14.00 to 14.50
No. 1 cast	18.25 to 18.75
No. 1 busheling	13.25 to 13.50
Drop forge flashings	13.25 to 13.50
Railroad grate bars	13.75 to 14.25
Stove plate	13.75 to 14.00
Pipes and flues	11.25 to 11.75

Philadelphia

August Steel Business Showed Gain of 25 to 35 Per Cent Over July

PHILADELPHIA, Sept. 2.—Local sales offices of steel companies uniformly report a gain in orders during August over July, ranging from 25 to 35 per cent in tonnage. The last week of the month continued the progress of previous weeks in recovery, although the pace is still slow. Labor Day being a pivotal point in years of business uncertainty, it is expected that buying will gather momentum. The week started with Eastern mill operations about on the level of a week ago. Prices also remain unchanged, exhibiting no tendencies either toward strength or further weakness.

Pig Iron.—Sales of foundry iron have been in fair volume in the past week, but most of the business was taken by one furnace company. This interest booked about 9000 tons on the basis of $20.50, furnace, for No. 2 plain, deliveries extending over the remainder of the year. Some of the lots sold ranged from 1000 to 2000 tons. The market maintains an undertone of strength, due mostly to the apparent determination of the active furnaces to make no sales at concessions from present prices. One furnace, in fact, advanced its base price 50c. a ton to $21. Stocks of iron in furnace yards are still large, though it is expected that a complete tabulation to be compiled this week will show some reduction from the stocks of a month ago.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varing from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.26 to $22.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.63
East. Pa. No. 1X	22.26 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.67 to 29.17
Basic delivered eastern Pa.	20.00 to 21.00
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.00 to 25.00

Billets.—Prices are unchanged at $37, Pittsburgh, for rerolling billets and $42 for forging quality.

Plates.—Eastern plate mills are operating this week at about last week's rate, averaging 50 per cent, but better than this in the case of one or two mills. Prices are unchanged, being 1.75c. and 1.80c., Pittsburgh, on small lots, with 1.70c. being quoted by mills on the larger lots.

Warehouse Business.—Prices for steel out of stock continue unchanged, for local delivery being as follows:

Soft steel bars and small shapes, 3.22c.; iron bars (except bands), 3.22c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.32c.; tank steel plates, ⅛ in., 3.47c.; blue annealed steel sheets, No. 10 gage, 3.75c.; black sheets, No. 28 gage, 4.75c.; galvanized sheets, No. 28 gage, 5.85c.; square twisted and deformed steel bars, 3.22c.; structural shapes, 3.32c.; diamond pattern plates, ¼-in., 5.30c.; ⅛-in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.15c.; squares and hexagons, cold-rolled steel, 4.65c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.10c.; narrower than 1 in., all gages, 4.60c.; steel bands, No. 12 gage to ⅛ in., inclusive, 3.97c.; rails, 3.35c.; tool steel, 8.50c.; Norway iron, 7c.

Structural Material.—The past week has been extremely quiet in fabricated steel work in this district. Very few projects of size are pending. Fabricating shops, however, are fairly busy on work taken in the past month or two. Plain material is quoted by most mills at 2c., Pittsburgh, with concessions of $1 or $2 a ton being given on the larger lot.

Bars.—Demand for soft steel bars has increased steadily in the past two weeks and rollings are now more satisfactory from the mill viewpoint. Mills are quoting 2.10c., Pittsburgh. Bar iron demand is also enlarging slightly and quotations by Eastern makers are on the basis of 2c., Pittsburgh.

Sheets.—A slightly increased demand for blue annealed sheets is reported by the largest Eastern maker. Orders for black and galvanized sheets in this district have not increased in keeping with the increase in tonnage of some other steel products. Prices show less variation, being now quite close to 4.60c. on galvanized, 3.50c. on black and 2.70c. on blue annealed, Pittsburgh basis.

Old Material.—Two weeks of light demand for scrap have followed the buying activity which carried heavy melting steel as high as $18. The undertone of the market continues firm, but there have not been sufficient sales to carry prices any higher. Prices are as quoted a week ago, with the exception of No. 1 cast, which is slightly easier.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$17.00 to $18.00
Scrap rails	17.00 to 18.00
Steel rails for rolling	19.00 to 19.50
No. 1 low phos., heavy 0.04 and under	21.00 to 21.50
Couples and knuckles	19.00 to 20.00
Rolled steel wheels	19.00 to 20.00
Cast-iron car wheels	18.00 to 18.50
No. 1 railroad wrought	19.00 to 20.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	14.00 to 14.50
Mixed borings and turnings (for blast furnace use)	12.50 to 13.00
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use)	14.00 to 14.50
Heavy axle turnings (or equivalent)	16.50 to 17.00
Cast borings (for steel works and rolling mills)	14.00 to 14.50
Cast borings (for chemical plants)	15.00 to 15.50
No. 1 cast	18.00 to 18.50
Heavy breakable cast (for steel plants)	17.00 to 17.50
Railroad grate bars	15.50 to 16.00
Stove plate (for steel plant use)	15.50 to 16.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	25.00 to 25.50
Steel axles	24.00 to 25.00

Standard Screw-Threads Adopted

The American Engineering Standards Committee has just approved as American Standard the finished work of the Sectional Committee on Standardization and Unification of Screw Threads, in the field of threads for bolts, machine screws, nuts and commercially tapped holes. The report has been prepared in collaboration and agreement with the National Screw Thread Commission.

By this action screw threads are narrowed down to, and standardized upon, two series—an "American Coarse Series" for general work, and an "American Fine Series" for work in which a finer thread is desirable, as with the special alloy steels used extensively in the manufacture of automobiles. The same form of thread is used in both. The coarse thread series is the present United States Standard (or Sellers), supplemented by the A. S. M. E. standard below ¼-in., and the fine-thread series is the S. A. E. standard, supplemented by the A. S. M. E. fine-thread.

Different classes of fit ("loose," "free," "medium" and "close") are established, with corresponding numerical tolerances to provide for unavoidable inaccuracies of workmanship under practical conditions. A standard screw thread nomenclature and also a system of identification symbols for use in correspondence, drawings, and shop practice are established.

A book on painting, varnishing, enameling, etc., has been issued by the Truscon Laboratorjes, Youngstown, Ohio. It has been compiled from the maintenance point of view and is entitled "Truscon Maintenance Data Book." It consists of approximately 100 pages, 8½ x 11 in., illustrated with maintenance charts, color charts, photographs and other illustrations and an index. The book is not issued for general free distribution and its price is $3 per copy.

MORE STACKS ACTIVE

Gain of Six Blast Furnaces in One Month, All Steel Making

PITTSBURGH, Aug. 30.—Six more blast furnaces were in production at the beginning of September than a month before in the Pittsburgh and nearby districts, according to the latest canvass. The gain was entirely in steel works, as distinct from merchant, furnaces. The Carnegie Steel Co., which had 24 furnaces in blast a month ago, now has 27 in production. The Jones & Laughlin Steel Corporation has added a furnace, and one additional stack each of the Youngstown Sheet & Tube Co. and the Wheeling Steel Corporation has resumed iron making in the month. Active merchant furnaces in the area embraced by the report number 6 out of a total of 23. There are no indications of an immediate increase in the number of such furnaces in production. Although the pig iron market has grown stronger, notably on foundry grades in the past few weeks, prices still are considered well below the level at which furnaces now idle can be operated profitably. The record of furnaces in and out of production on Sept. 1, in comparison with that for Aug. 4, follows:

Pittsburgh District

Steel Works Furnaces

	Total	Sept. 1, 1924 In	Sept. 1, 1924 Out	Aug. 4, 1924 In	Aug. 4, 1924 Out
American Steel & Wire Co.					
Donora	2	1	1	1	1
Shoenberger	2	0	2	0	2
Carnegie Steel Co.					
Carrie	7	7	0	7	0
Clairton	3	2	1	1	2
Duquesne	6	2	4	2	4
Edgar Thomson	11	6	5	4	7
Edith	1	0	1	0	1
Isabella	3	0	3	0	3
Lucy	2	1	1	1	1
Neville	1	1	0	1	0
Jones & Laughlin Steel Corporation					
Aliquippa	5	5	0	4	1
Eliza	6	3	3	3	3
Soho	1	0	1	0	1
National Tube Co.	4	3	1	3	1
Pittsburgh Crucible Steel Co.	2	1	1	1	1
Pittsburgh Steel Co.	2	1	1	1	1
Merchant Furnaces					
Clinton Iron & Steel Co.	1	0	1	0	1
Total	59	33	26	29	30

Mahoning & Shenango Valley Districts

Steel Works Furnaces

Carnegie Steel Co.					
Farrell	3	1	2	1	2
New Castle	4	2	2	3	1
Niles	1	0	1	0	1
Ohio	6	3	3	2	4
Sharon	1	0	1	0	1
Republic Iron & Steel Co.	7	2	5	2	5
Sharon Steel Hoop Co.	1	1	0	1	0
Trumbull Cliffs Furnace Co.	1	1	0	1	0
Youngstown Sheet & Tube Co.	9	4	5	3	6
Merchant Furnaces					
A. M. Byers Co.	1	0	1	0	1
Hanna Furnace Co.					
West Middlesex	1	0	1	0	1
Leetonia, Ohio	1	1	0	1	0
Dover, Ohio	1	0	1	0	1
Reliance Coke & Furnace Co.					
West Middlesex, Pa.	1	0	1	0	1
Sharpsville, Pa.	1	1	0	1	0
McKeefrey Iron Co.	1	0	1	0	1
Sharpsville Furnace Co.	1	1	0	1	0
Shenango Furnace Co.	2	1	1	1	1
Struthers Furnace Co.	1	0	1	0	1
Stewart Furnace Co.	1	0	1	0	1
Valley Mold & Iron Corp.	1	0	1	0	1
Total	46	18	28	17	29

Western Pennsylvania

Steel Works Furnaces

Bethlehem Steel Co., Johnstown, Pa.	11	3	8	3	8
Merchant Furnaces					
Adrian Furnace Co.	1	1	0	1	0
American Manganese Mfg. Co.	2	0	2	0	2
Kittanning Iron & Steel Mfg. Co.	1	0	1	0	1
McKinney Steel Co.					
Scottdale, Pa.	1	1	0	1	0
Josephine, Pa.	2	0	2	0	2
Perry Furnace Co.	1	0	1	0	1
Punxsutawney Furnace Co.	1	0	1	0	1
Total	20	5	15	5	15

Wheeling District

Steel Works Furnace

Carnegie Steel Co.					
Bellaire, Ohio	2	1	1	1	1
Mingo, Ohio	4	1	3	1	3
Steubenville, Ohio	1	0	1	0	1
National Tube Co.	2	1	1	1	1
Wheeling Steel Corporation	4	3	1	2	2
Weirton Steel Co.	1	1	0	1	0
Total	14	7	7	6	8
Grand Total	139	63	76	57	82

Standardization of Pipe Flanges and Fittings

Rapid and important progress is being made by the sectional Committee on Pipe Flanges and Fittings, working under the procedure of the American Engineering Standards Committee. One of the more important changes is the elimination of approximately half of the sizes above 10 in. in diameter; the older size series provided an unnecessarily close spacing of diameters. A rather remarkable piece of work has been done in the preparation of standards for steel flanges and flanged fittings, for 250, 400, 600 and 900 lb. steam pressure, with 750 deg. Fahr. superheat temperature.

Extensive work on pipe and pipe fittings accomplished during the last four or five years in Germany, Switzerland and Holland, by the national standardizing bodies working in close cooperation, has now reached a tentative conclusion. Germany, Switzerland and Holland have under consideration well-advanced drafts of standards for pipe flanges and fittings that are in very close agreement. It is likely that western and central Europe will adopt a comprehensive international system of pipe and pipe flange standards, including all kinds of metallic pipe, and the fittings used with all types of such pipe, together with standard sizes and forms of gaskets and other accessory items.

Luxemburg's pig iron production in 1923 is reported at 1,406,666 metric tons, against 2,547,861 tons in 1913; iron ore production 4,097,549 tons against 7,333,372 tons, steel production 1,193,471 tons against 1,182,227 tons. Both pig iron and steel production increased considerably during the first half of 1924.

New York Steel Treaters' Outing

The New York chapter of the American Society for Steel Treating has made plans for an outing Saturday, Sept. 13. Members of the chapter are asked to assemble at South Ferry, New York, at 2 p. m. for transportation to Boehm's Beach near New Dorp, S. I. This is the first occasion of the kind attempted by the New York steel treaters. The program includes bathing, baseball and field sports, followed by a shore dinner. The tickets for members are $1.50, the chapter assuming the major portion of the expense of the excursion.

Bituminous coal production was reported by the United States Geological Survey at 7,831,000 net tons for the week ended Aug. 16, making a total of 277,504,000 tons for the calendar year to date. Corresponding figures for last year were 10,843,000 tons for the week and 343,229,000 tons for the year to date. The figure for the current week is the lowest for any corresponding week since the war, with the exception of 1922, when there was a strike.

American machinery exports in July totaled $23,383,472, with "all other machinery and parts" at $8,506,512. For the seven months ended July 31 the grand total was $185,901,280, compared with $161,000,790 for the first seven months of 1923. In the current year the "all other machinery figure" for seven months was $69,658,618. These figures supplement those given in the table on page 519 of THE IRON AGE for Aug. 28.

FABRICATED STEEL BUSINESS

Structural Steel Awards Total Nearly 16,000 Tons —Inquiries Over 20,000 Tons

Structural steel awards for the last week of August, as reported to THE IRON AGE, showed a falling off from the week previous, but this probably was to have been expected in a pre-holiday period. The total was about 15,600. Inquiries reported for the week total about 20,650 tons.

Awards follow:

Merchants' and Manufacturers' Exchange, store and loft building at Madison Avenue and Thirty-fourth Street, New York, 2700 tons, to Levering & Garrigues Co.

Barrett Brothers, apartment building in New York, 500 tons, reported awarded to Hedden Iron Construction Co.

Erie Railroad, 400 tons, to Shoemaker Bridge Co.

Factory building, Brooklyn, N. Y., 250 tons, to be fabricated by American Bridge Co. and erected by Post & McCord.

School No. 31, Buffalo, 200 tons, to Kellogg Structural Steel Co.

City hospital, Auburn, N. Y., 150 tons, to Kellogg Structural Steel Co.

United Gas Improvement Co., Philadelphia, boiler house, 160 tons, to Bancroft-Jones Corporation.

School No. 71, Buffalo, 150 tons, to R. S. McMannus Steel Corporation.

Lafayette Hotel, Buffalo, addition, 250 tons, to R. S. McMannus Steel Corporation.

Kenilworth School, Tonawanda, N. Y., 150 tons, to Buffalo Structural Steel Co.

Flint & Kent, Buffalo, store addition, 100 tons, to Buffalo Structural Steel Co.

Cincinnati, Lebanon & Northern Railroad, freight station at Cincinnati, 250 tons, to General Iron Works Co.

United Masonic Temple Building, Chicago, 5525 tons, to Morava Construction Co.

Great Northern Railway, improvement to Dock No. 1, Allouez, Wis., 4020 tons, to American Bridge Co.

Harlan, Ky., highway span, 224 tons, to Vincennes Bridge Co.

Pure Oil Co., three oil storage tanks, 200 tons, to Warren City, Ohio, Boiler Co.

H. M. Byllesby Co., Chicago, garage and service building, Oklahoma City, Okla., 200 tons, to J. B. Klein Iron & Foundry Co.

Kresge store building, South Bend, Ind., 100 tons, to Flower City Ornamental Iron Works, Cleveland.

Rock Island Lines, two 61½-ft. deck plate girder spans, 100 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for structural steel work include the following:

Philadelphia-Camden Bridge, brackets for sidewalks, Philadelphia approach, 155 tons.

Franklin Savings Bank Building, Eighth Avenue and Forty-second Street, New York, 350 tons.

Eastern Malleable Iron Co., New Britain, Conn., 350 tons.

High school, Asbury Park, N. J., 500 tons, a re-letting due to failure of general contractor.

Pennsylvania Railroad, bridge at Greensburg, Pa., 200 tons.

New Orleans Public Service Corporation, boiler house, 900 tons.

Narragansett Electric Light Co., power house addition, Providence, R. I., redesigned and now taking 1600 tons, or 900 tons more than first estimated.

Union Temple and Community House, Eastern Parkway, Brooklyn, 1500 tons.

Labor Temple, Fourteenth Street, New York, 800 tons.

Crane Co., Chicago, buildings B 4, 5, 6 and 7, 2000 tons.

Lake Shore Athletic Club building, Chicago, 7500 tons, revised figures asked.

Second National Bank Building, Saginaw, Mich., 2500 tons.

American Insurance Union, Columbus, Ohio, reported as 1500 tons in Aug. 28 issue, now reported as 3500 tons.

RAILROAD EQUIPMENT BUYING

Chesapeake & Ohio Orders 1987 Gondola Car Bodies—Pennsylvania Inquires

Orders of the Chesapeake & Ohio for 1987 gondola car bodies, requiring close to 20,000 tons of steel, constitute the largest buying of the kind since the first week of August. The Pennsylvania Railroad, not recently a buyer of cars, is in the market for 6000 freight cars. The Missouri Pacific is getting bids on 50 locomotives.

The New York, Ontario & Western has ordered underframes for four cabooses from the Magor Car Co.

The United States Rubber Co. has closed on 10 tank cars with the American Car & Foundry Co.

The Barnsdall Refining Co. has placed 50 tank cars with the Pennsylvania Car Co.

Chesapeake & Ohio has awarded 1000 gondola car bodies to the Richmond Car Works and 987 to the American Car & Foundry Co.

The Pennsylvania has entered the market for 6000 freight cars.

The Missouri Pacific is inquiring for two dining cars and is getting estimates on 50 locomotives.

Broadened Demand at Youngstown

YOUNGSTOWN, Sept. 2.—In the Youngstown district No. 2 foundry iron has been advanced to $20 per ton, representing an increase of 50c. to $1. Makers report betterment in demand from foundry interests, which are buying to some extent against winter requirements. Inroads are still being made into accumulated iron stocks owing to the higher average ingot production, and further expansion in active iron capacity is certain to take place if the present activity of steel makers continues.

Sheet makers in the Mahoning Valley likewise report improved demand, running principally to black and full finished grades, and maintenance of an average 75 per cent operating rate is forecast for the immediate future.

Automobile parts makers in the Detroit territory are coming into the market in a more active way for sheets, strips and cold finished bars.

Gun Plant to Be Sold at Auction

Announcement was made Aug. 29 that the Erie howitzer plant, better known as the Erie Brakeshoe Co., Erie, Pa., which, during the World War created a record in gun production, will be offered for sale by the War Department on September 29. The plant was offered for sale a year ago, but the Government refused to accept the bids made at the time. Later it was bought at private sale by the Ashworth-Odell Textile Mills at Salamanca, N. Y., but that company never carried out its agreement and the plant will be again offered for sale.

British Foreign Steel Trade in July

July brought a slight improvement to the export trade of the British iron and steel industry, says a cable to the Department of Commerce from acting commercial attache H. D. Butler, London. Exports of iron and steel amounted to 339,748 gross tons, an advance of nearly 5 per cent over the volume of trade transacted in June. Imports also increased, rising from 175,476 tons in June to 201,172 tons in July.

Brown & Co., Inc., Pittsburgh, for many years engaged in the manufacture of iron bars and iron bar products, has gone out of business and has sold the entire plant to Briggs & Turivas, Chicago, which will dismantle it.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....1.90c. to 2c.

Structural Materials

Beams, channels, etc., base, per lb.....2c. to 2.10c.
Sheet piling .....2.10c. to 2.25c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.10c. to 2.15c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.10c. to 2.15c.
Refined iron bars, base, per lb.....2.90c. to 3c.
Double refined iron bars, base, per lb.....4.50c.
Stay bolt iron bars, base, per lb.....6.50c. to 7.00c.

Hot-Rolled Flats

Hoops, base, per lb.....2.60c. to 2.75c.
Bands, base, per lb.....2.50c. to 2.60c.
Strips, base, per lb.....2.25c. to 2.50c.

Cold-Finished Steel

Bars and shafting, drawn or rolled, base, per lb.....2.80c.
Bars and shafting, drawn or rolled, l.c.l., per lb.....3.05c.
Shafting, turned and polished, base, per lb.....2.80c.
Bars, S. A. E. Series, No. 2100.....4.25c. to 4.50c.
Bars, S. A. E. Series, No. 2300.....6.00c.
Bars, S. A. E. Series, No. 3100.....4.90c. to 5.00c.
Strips, base, per lb.....4.00c. to 4.25c.

Wire Products

(To jobbers in car lots)

Nails, base, per keg.....$2.80
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in.....2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....$2.55
Annealed fence wire, base, per 100 lb..... 2.70
Spring wire, base, per 100 lb..... 3.50
Galvanized wire No. 9, base, per 100 lb..... 3.15
Galvanized barbed, base, per 100 lb..... 3.50
Galvanized staples, base, per keg..... 3.50
Painted barbed wire, base, per 100 lb..... 3.25
Polished staples, base, per keg..... 3.25
Cement coated nails, base, per count keg..... 2.20
Woven fence (to jobbers) 726-12½-12, per 100 rods....18.70
Woven fence (to retailers) 726-12½-12, per 100 rods....20.03
Bale ties, carloads to jobbers..75, 5, 5 and 2½ per cent off list

Bolts and Nuts

Machine bolts, small rolled threads,
60, 20 and 10 per cent off list
Machine bolts, all sizes, cut threads..60 and 20 per cent off list
Carriage bolts, smaller and shorter, rolled threads
60 and 20 per cent off list
Carriage bolts, cutthreads, all sizes..60 and 10 per cent off list
Hot pressed nuts, blank or tapped, square.....4.75c. off list
Hot pressed nuts, blank or tapped, hexagons....5.25c. off list
C.p.c. and t. square or hex nuts, blank or tapped.4.75c. off list
Eagle carriage bolts.....65, 10 and 10 per cent off list

Semi-finished hex nuts:
⅞ in. and smaller, U. S. S.....80, 10 and 5 per cent off list
⅞ in. and larger, U. S. S.....75, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S. A. E., ⅞ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 20 per cent off list
Bolt ends with cold pressed nuts.....60 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
55 and 5 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
70 and 10 per cent off list
Washers .....5.75c. to 6.00c.
Lock washers .....80 per cent off list

Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅞-in.	$13.25	$13.50
5/16-in.	4.90	4.90	1-in.	16.25	16.50
⅜-in.	5.90	6.25	1⅛-in.	22.50	23.00
7/16-in.	7.50	8.50	1¼-in.	34.00	34.00
½-in.	9.75	10.00	1⅜-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

Milled hex. head cap screws.....85 per cent off list
Milled standard set screws, case hardened..85 per cent off list
Milled headless set screws, cut thread....85 per cent off list
Upset hex. head cap screws, U. S. S. thread,
85 and 10 per cent off list
Upset hex. head cap screws, S. A. E. thread,
85 and 10 per cent off list
Milled studs .....80 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb.....$2.60
Small rivets.....70, 10 and 5 per cent off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb.....	$2.80
Spikes, ½ in. and smaller, base, per 100 lb.....	3.25
Spikes, boat and barge, base, per 100 lb.....	3.25
Track bolts, all sizes, base, per 100 lb.....	3.75
Track bolts, heat-treated, base, per 100 lb.....	4.25
Tie plates, per 100 lb.....	2.50
Angle bars, base, per 100 lb.....	2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+1	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	55	3 and 3¼ in.	36
1¼ and 1½ in.	47	3½ and 3¾ in.	37
1¾ in.	31	4 in.	41
2 and 2¼ in.	22	4½ in. and 5 in.	33
2½ and 2¾ in.	32		

Hot Rolled

3 and 3¼ in.	38	4 in.	43
3½ in. and 3¾ in.	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....87 per cent off list
Carbon 0.30 to 0.40, base.....85 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2¼-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1¼-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	17	5½-in. O.D. 9 gage	55
2¼-in. O.D. 11 gage	18	5½-in. O.D. 9 gage	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb coating, 100 lb. base	$11.00	20-lb. coating I. C.	$14.90
8-lb. coating I. C.	11.30	25-lb. coating I. C.	16.20
12-lb. coating I. C.	12.70	30-lb coating I. C.	17.35
15-lb. coating I. C.	13.95	35-lb. coating I. C.	18.35
		40-lb. coating I. C.	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.65c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.50c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....4.75c.

Galvanized

No. 28 (base), per lb.....4.60c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....4.95c. to 5c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.50c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.75 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$90.00 to $95.00
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid	92.50 to 95.00
Ferrosilicon, 50 per cent, delivered	72.00 to 75.00
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent....$32.00 to $33.00
Spiegeleisen, domestic, 16 to 19 per cent.... 31.00 to 32.00
Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42; 12 per cent, $44.50; 14 to 16 per cent (electric furnace), $36.00.
Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$18.00 to $19.00	
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	19.00 to 20.00	
Per 1000 f.o.b. works:		
Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$36.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 42.00
Ohio	40.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton	6.00 to 7.00	
Silica Brick:		
Pennsylvania		35.00
Chicago	44.00 to 45.00	
Birmingham		50.00
Ground silica clay, per net ton	7.50 to 8.00	
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		45.00

Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$37.00 to $38.00
Rolling billets, 2-in. and under	37.00 to 38.00
Forging billets, ordinary carbons	42.00 to 43.00
Sheet bars, Bessemer	$37.50 to 38.00
Sheet bars, open-hearth	37.50 to 38.00
Slabs	37.00 to 38.00
Wire rods, common soft, base, No. 5 to ⅜-in.	46.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2c.
Skelp, sheared, per lb.	2c.
Skelp, universal, per lb.	2c.

Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb.	1.85c. to 1.90c.
Rails, light, rail steel, base, per lb.	1.65c. to 1.75c.
Bars, common iron, base, per lb., Chicago mill	2.15c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rail steel reinforcing, base, per lb.	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill	2c.
Cold-finished steel bars, base, Chicago, per lb.	2.75c.
Ground shafting, base, per lb.	3.20c.
Cut nails, base, per keg	$2.90

Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100*(1½% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.75
2500 (5% Nickel)	6.00 to 6.50
3100 (Nickel Chromium)	3.65 to 3.75
3200 (Nickel Chromium)	5.50 to 5.75
3300 (Nickel Chromium)	7.25 to 8.00
3400 (Nickel Chromium)	6.50 to 7.00
5100 (Chromium Steel)	3.50 to 3.75
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.50
6100 (Chromium Vanadium spring steel)	4.25 to 4.50
9250 (Silicon Manganese spring steel)	3.50 to 3.75
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.25 to 4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25 to 4.50
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75 to 4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality, per 100-lb., f.o.b. Pittsburgh. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb:

Philadelphia, domestic	$0.32	Buffalo	$0.265	Kansas City	$0.735	*Pac. Coast, ship plates	$1.20
Philadelphia, export	0.235	Cleveland	0.19	Kansas City (pipe)	0.705	Birmingham	0.58
Baltimore, domestic	0.31	Youngstown	0.095	St. Paul	0.60	Memphis	0.56
Baltimore, export	0.225	Detroit	0.29	Omaha	0.735	Jacksonville, all rail	0.70
New York, domestic	0.34	Cincinnati	0.29	Omaha	0.705	Jacksonville, rail and water	0.415
New York, export	0.255	Indianapolis	0.31	*Denver	1.15	New Orleans	0.67
Boston, domestic	0.365	Chicago	0.34	†Denver (pipe)	1.17		
Boston, export	0.255	St. Louis	0.43	*Pacific Coast	1.15		

*Applied minimum carload 30,000 lb. †Minimum loading 46,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Aug.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
27.....	13.62½	13.12½	51.75	8.25	8.00	6.57½	6.22½
28.....	13.62½	13.00	51.55	8.25	8.00	6.55	6.20
29.....	13.62½	13.12½	52.00	8.25	8.00	6.60	6.25
30.....	13.62½	13.25	....	8.25	8.00	6.60	6.25
Sept. 2.....	13.62½	13.25	53.37½	8.25	8.00	6.65	6.30

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Sept. 2.

Today the markets are all exceedingly quiet, due to the holiday period. After declining, copper is again stronger. The tin market has advanced on fairly active buying. Demand for lead is small, but prices are very firm. Moderate buying of zinc has taken place in a fairly strong market.

Copper.—Previous to the announcement on Friday that the Germans had ratified the London agreement, the copper market had fallen to a minimum of 13.25c., delivered, with most business done at 13.37½c. After that pronounced strength developed and the market advanced to a minimum of 13.50c., delivered. Since then developments have been interfered with by the holiday. Developments have been very few today and an appraisal of the market is somewhat difficult. In the absence of active dealing, the minimum price of electrolytic copper appears to be 13.50c., delivered, with Lake copper quoted at 13.75c., delivered. A good business has been done in the last week and a fair amount of inquiry is both before the market and expected.

Copper Averages.—The average price of Lake copper for the month of August, based on daily quotations in THE IRON AGE was 13.61c., delivered. The average price of electrolytic copper was 13.51c., delivered, or 13.26c., refinery.

Tin.—Up to Friday, Aug. 29, inclusive, a fairly large volume of business was done, the total being at least 1000 tons, and possibly reaching 1500 tons. More than half of this was bought by dealers, the rest being purchased by consumers, who absorbed prompt and early shipment metal. Last Friday was probably the most active day, when 300 tons changed hands, with one dealer and one consumer the principal buyers. On Thursday, Aug. 28, in an erratic market on the New York Metal Exchange, spot metal sold first at 51.37½c., then at 51.75c. and finally at 51.62½c. It is pointed out that an odd feature of the present market is the fact that on a steamer due tomorrow, Sept. 3, there is 500 tons of tin coming from London. Today the market has scarcely found itself after the holiday and has been rather quiet, with sales in small volume. Spot Straits tin is quoted today at 53.37½c., New York, the advance over last week being due to the fact that London prices today were £6 per ton higher than on last Friday, with spot standard quoted at £260 15s., future standard at £261 7s. 6d., and spot Straits at £262. These prices are about £10 per ton higher than a week ago. The Singapore price yesterday was £261. Deliveries into consumption during August were 4805 tons. At the end of the month arrivals totaled 3200 tons, with 5115 tons reported afloat.

Lead.—No large transactions are noted, but the market is exceedingly firm. The lowest quotation at St. Louis is 8c., with the prices of the leading interest and the independents both on the same level, or 8.25c., New York.

Zinc.—The market maintains its strength on fairly good buying previous to the holidays, and is quoted a little higher today at 6.30c., St. Louis, or 6.65c., New York. There is some interest in the export market and there has been some buying by domestic consumers.

Nickel.—Wholesale lots of shot and ingot nickel are quoted at 27c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers.

Antimony.—Chinese metal in wholesale lots in a strong market is quoted at 10.25c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 26.50c. to 27c. per lb., duty paid, delivered.

Chicago

SEPT. 2.—Interest in the metals slackened as a result of the holiday and copper and lead have declined. Considerable lead has been sold at concessions, but the same cannot be said of copper. Zinc is unchanged and probably is the firmest of all the metals. The old metals remain unaltered outside of block tin, which has advanced. We quote in carload lots: Lake copper, 13.75c.; tin, 53c.; lead, 8.05c.; spelter, 6.25c.; antimony, 12c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9.25c.; red brass, 8.50c.; yellow brass, 7.25c.; lead pipe, 7c.; zinc, 4c.; pewter, No. 1, 25c.; tin foil, 32c.; block tin, 38c., all buying prices for less than carload lots.

Operations Improved in Youngstown District

YOUNGSTOWN, Sept. 2.—Rolling mills in the Youngstown district suspended for Labor Day, but resumed Tuesday with larger schedules for remainder of the week than were maintained the preceding week. For the first time in three months the open-hearth department at the Brier Hill works of the Youngstown Sheet & Tube Co. is active, five furnaces being in operation. Of 52 independent open-hearth furnaces in the Mahoning Valley, 37 are in service this week.

Sheet mill schedules show a moderate gain over the previous week, 88 mills being scheduled. The Trumbull Steel Co. is operating all 19 tin mills at its plant in Warren, and has also added a third strip mill to its active complements.

The Republic Iron & Steel Co. is operating five light bar mills and its 14-16-in. bar mill at the Brown-Bonnell works. The Sheet & Tube Co. has its 9-in. merchant bar mill engaged at the East Youngstown property, but its 12-in. mill is idle.

At its Mercer, Pa., plant the American Sheet & Tin Plate Co. is operating eight mills this week, against six last week.

The entire open-hearth operations of the district, including units of the Steel Corporation subsidiaries and the independents, embrace 59 of 82 furnaces, an average of 75 per cent. The Sharon Steel Hoop Co. is operating its properties at Youngstown and Sharon virtually at 100 per cent. The Sheet & Tube Co. estimates its average production rate in the Youngstown district at 70 per cent, and the Republic company at 65 per cent.

Non-integrated rolling mill schedules show eight sheet mills engaged by the Newton Steel Co. and the Thomas Sheet Steel Co. each; seven by the Falcon Steel Co. and four by the Waddell Steel Co.

Partial resumption of the Sheet & Tube Co.'s open-hearth plant will give employment to 400 additional men in the district.

Fourteen distributers of link belt products were represented Aug. 25 to 27 at the Indianapolis plant of the Link Belt Co., where they were made acquainted with the company's manufacturing processes and given intensive instruction in the uses of the products. This is part of a new arrangement by which the company hopes to familiarize its distributers more thoroughly with the product and thus promote cooperation Those present, 21 in number, came from as far apart as Maine and Texas.

PERSONAL

Richard Gilpin Wood, president, and Jonathan Read Jones, vice-president, of the Alan Wood Iron & Steel Co., resigned last week at a meeting of the board of directors of the company at its home office, Widener Building, Philadelphia. Howard Wood, Jr., was elected president and Alan D. Wood was elected vice-president and treasurer. The other officers remain as heretofore.

Richard G. Wood has headed the company for a number of years. Although still active in the business,

J. R. JONES

R. G. WOOD

as he remains a director, he is 75 years of age and desired to be relieved of some of the details of management. In 1870 Mr. Wood engaged with his father in the manufacture of sheet iron at McKeesport, Pa., remaining there until 1901, when the McKeesport plant was acquired by the American Sheet Steel Co. In 1904 Mr. Wood became vice-president and director of the Alan Wood Iron & Steel Co., and in 1905, general manager of the steel works department at Ivy Rock, Pa. He later became president and chairman of the board and in recent years has been its active head.

Jonathan R. Jones, like Mr. Wood, is one of the veterans of the steel industry, having been connected with it in one capacity or another for 58 years. He is now 78 years of age. From 1866 to 1878 Mr. Jones was engaged as an engineer in the construction of bridges. During a part of this time he was connected with the Keystone Bridge Co., Pittsburgh. In 1886 he became secretary and treasurer of the Alan Wood Iron & Steel Co. and later was advanced to the vice-presidency. For many years Mr. Jones was the supervising head of the sales department and is well known to many of the buyers of the East.

Albert T. Weaver, general manager of sales, wire department, Interstate Iron & Steel Co., Chicago, has resigned to devote his entire attention to the affairs of the Autoist Mutual Insurance Co., Chicago, of which he has been an officer and director for some time. H. S. Schroeder, general manager of sales of the bar division of the Interstate company, has been appointed general manager of sales in charge of all departments.

Richard M. Lambert, vice-president and treasurer of the Matthew Addy Co., Cincinnati, has resigned his position, and after a vacation will engage in another business. He was connected with the Addy company for 30 years, entering the employ as office boy. He was confidential man for the old partnership, and on the incorporation of the company in 1915 he was elected treasurer. Three years ago he was elected a vice-president. Mr. Lambert has always taken an active part in the affairs of the National Credit Men's Association and is president of the Cincinnati Association of Credit Men.

James A. Galligan, formerly with the By-Products Coke Corporation, Chicago, and more recently vice-president W. H. Harris & Co., Chicago, has been elected vice-president of the Mortimer B. Flynn Coal Co., 21 East Van Buren Street, Chicago. For a number of years he was in charge of coke sales for Pickands, Brown & Co., Chicago, dealer in pig iron and coke.

Jerome R. George, Morgan Construction Co., Worcester, Mass.; James Louis Gibney, electric furnace expert, Buffalo; Forman Hamilton, metallurgical chemist, Coraopolis, Pa.; Curtis R. Henry, assistant superintendent open-hearth department, United Alloy Steel Corporation, Canton, Ohio, and Harold D. Stuck, superintendent tool manufacturing company, Lawrence, Mass., are among those added to the membership of the Iron and Steel Institute at the autumn meeting held in London this week.

Dr. Adolph Naegel, professor of engineering at the Technical High-school of Dresden, Germany, is making a study of engineering colleges in this country, and will not return until about Oct. 20.

Prof. Georg Schlesinger, professor of mechanical engineering of the Charlottenburg Technical High-school, has arrived in the United States.

R. K. Baker, for 22 years identified in various capacities with the Moline Plow Co., Moline, Ill., and for the last 15 years manager of the Moline works, has resigned. He will be succeeded by E. F. Carlmar, of the Auburn Automobile Co., Auburn, Ind., who previously was connected with the Moline Plow Co.

E. J. Lowry, metallurgist Hickman, Williams & Co., will be the speaker at the first fall meeting of the Chicago Foundrymen's Club at the City Club, Chicago, Monday evening, Sept. 8. His subject will be "Different Grades of Pig Iron Produced in the Blast Furnace and Their Varied Uses in the Foundry."

D. K. Rivas has been appointed manager of the New York office of the Wagner Electric Corporation at 50 Church Street.

J. E. Lose, for the past five years assistant superintendent of the Carrie Furnaces, Carnegie Steel Co., Rankin, Va., has been appointed superintendent in succession to the late Jacob H. Mohr. William S. Unger, for the past two and one-half years assistant superintendent of blast furnaces at the Clairton, Pa., works of the company, has been transferred to the Carrie Furnaces to fill the vacancy created by Mr. Lose's promotion. Mr. Lose was educated at Carnegie Institute of Technology and has been identified with the Carnegie Steel Co. for 14 years, all of that time at the Homestead Steel Works and the Carrie Furnaces. Mr. Unger was graduated from Cornell University, with a degree of mechanical engineer. He has been with the Carnegie Steel Co. for eight years, first at the Duquesne Works and later at the Homestead and Clairton Works.

Sidney Thompson, president Defiance Screw Machine Products Co., Defiance, Ohio, who has held a controlling interest in the plant of the Napoleon Products Co., Napoleon, Ohio, manufacturer of automobile hubs and small parts, has disposed of his interest in the latter company to Glen Small, manager, and a group of associates who will continue the operation of the plant.

Col. W. Thomlinson of Dorman, Long & Co., one of the leading British iron and steel companies, whose Carlton Iron Works subsidiary is a producer of ferromanganese, is now in the United States.

Will H. H. Myers, formerly director of vocational training at the plant of the R. K. Le Blond Machine Tool Co., Cincinnati, has taken a position in the trades and industries division of the Department of Education, State of Ohio, and will be stationed at Portsmouth, Ohio.

Leonard M. Brin of San Antonio, Tex., has been appointed assistant trade commissioner to Mexico City, by Julius Klein, director of the Bureau of Foreign and Domestic Commerce. Previous to his association with the automotive division of the bureau in May, 1923, Mr. Brin served four years as salesman and factory representative of American manufacturers in Mexico and Panama.

OBITUARY

JOHN C. MABEN, formerly president and one of the organizers of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., died Sept. 1, at Atlantic City, N. J. He was born at Petersburg, Va., in 1839, and was educated in private schools at Richmond, Va., and Princeton, N. J. In 1868 he moved from Richmond to New York, becoming a partner in the banking firm of Lancaster, Brown & Co. Besides taking an active part in organizing the Sloss Iron & Steel Co. in 1887, and its successor, the Sloss-Sheffield Steel & Iron Co. in 1899, he was one of the organizers and directors of the Richmond-West Point Railway & Warehouse Co., now part of the Southern Railway. He became president of the Sloss-Sheffield company in 1902 and was also a director of the Lanston Monotype Machine Co. Mr. Maben served in the Confederate Army during the Civil War as captain of cavalry. His New York home was at the Hotel Vanderbilt. Funeral services were held yesterday at the Church of the Transfiguration, New York.

JOHN C. MABEN

STEPHEN MOLTRUP, secretary and treasurer Moltrup Steel Products Co., Beaver Falls, Pa., and for 40 years active in the cold-drawn steel business, died at his home in Beaver Falls, Aug. 27. He had been in poor health for the past three years and had been confined for the past five weeks. He was born in Loudonville, Ohio, 60 years ago but went to Beaver Falls 40 years ago and had since made his home there. His first connection with the steel industry was with the Hartman Steel Co. Later he was with the Union Drawn Steel Co., severing that connection to become general manager Standard Gauge Steel Co., with which he was identified until about two years ago, when that company was taken over by the Union Drawn Steel Co. He then joined the Moltrup Steel Products Co., which, with his brother, J. Thomas Moltrup, he organized 10 years ago. He was active in the business, civic and charitable affairs of Beaver Falls. Mrs. Moltrup, three daughters, two brothers and three sisters survive him.

HENRY BOEHMER, pioneer foundryman of Wisconsin, died at his home in Mayville, Wis., on Aug. 27, at the age of 91 years. He was born in Germany and came to America in 1848, settling in Albany, N. Y., and pursuing his trade for a short time, then moving to Sheboygan, Wis., and then to Mayville, where in 1851 he established a foundry and machine shop, now operated as Boehmer Brothers. He was active in the business over 60 years, retiring at 79.

CHARLES A. KLUMP, for 56 years identified with the malleable castings business in Cleveland, died Aug. 29, aged 81 years. Mr. Klump went to Cleveland in 1888, and became one of the first superintendents of the National Malleable Iron Co., later absorbed by the National Malleable Castings Co. He was a director of the latter company until his death.

WILLIAM B. MCCARTHY, long and favorably known in the iron and steel trade in Cleveland, died Aug. 18, at Delaware Water Gap, on a motor trip to regain health. He was 54 years of age and many years ago was connected with the Kilby Mfg. Co., Cleveland. Later he carried on a business in iron and steel scrap until compelled by ill health to retire about two years ago.

HENRY J. CASE, inventor and manufacturer of farm implements, died Aug. 31, at his home at Poughkeepsie, N. Y. Mr. Case built the first steel frame twine-binding harvester in 1875. In recent years he had been technical advisor to the McCormick and Deering companies of Chicago; the Johnson Co., Batavia, N. Y., and the Adriance and Moline companies of New York. He is survived by his wife, two daughters and three sons.

JOHN W. DOUGHERTY, formerly president of Pittsburgh Crucible Steel Co., and vice-president of the Crucible Steel Co. of America, of which the former is a subsidiary, died suddenly in a Paris hotel on Sept. 1, at the age of 57. He was on his way home following a European tour. He was a graduate of Lehigh University, and before becoming head of the Pittsburgh Crucible Steel Co., in 1911, had been general superintendent of the Pennsylvania Steel Co., Steelton, Pa., now the Steelton works of the Bethlehem Steel Co. Since 1920 Mr. Dougherty had devoted his time chiefly to iron ore companies in which he was financially interested.

JOHN W. DOUGHERTY

CANADA IRON OUTPUT DROPS

Production of 45,480 Tons in July Marks Low Record for This Year

TORONTO, ONT., Sept. 2.—The production of 45,480 gross tons of pig iron in Canada during July marked a new low record for the year. In spite of this decline the tonnage recorded so far this year, while less than that of 1923, exceeded the production for the corresponding periods of both 1922 and 1921. The production of foundry iron during July was 6960 gross tons, or 43 per cent below the 12,182 tons reported for June; malleable iron fell off 79 per cent to 3399 tons. Basic iron, on the other hand, shows an advance of 22 per cent with 35,121 tons reported for the month. The output for the seven months ending with July totalled 472,585 tons, which includes 328,141 tons of basic, 106,954 tons of foundry and 37,490 tons of malleable iron. The total output of pig iron for the corresponding period last year was 516,793 gross tons.

The number of furnaces in blast at the end of July was unchanged at four, located as follows: British Empire Steel Corporation, Sydney, N. S., 2; Steel Co. of Canada, Ltd., Hamilton, Ont., 1, and the Algoma Steel Corporation, Sault Ste. Marie, Ont., 1. Since the beginning of August the British Empire Steel Corporation has blown out one furnace at Sydney.

During July 52,237 tons of steel ingots and castings were produced, which was 24 per cent below the output of 68,914 tons for the previous month. The curtailment was mostly in the quantity of basic open hearth steel ingots produced for further use of reporting firms. This grade declined 24 per cent to 50,211 tons. Direct steel castings at 1768 tons marked a decline of 30 per cent. The cumulative production of steel ingots and castings in Canada for the first seven months of this year was 540,970 tons, comprising 520,020 tons of steel ingots and 20,950 tons of direct steel castings. This was about 10,000 tons less than the total output for the corresponding period last year and exceeded 1922 and 1921 totals by 43,000 and 27,000 tons, respectively.

Partly Killed Simple Steels—I

(*Continued from page 565*)

ingot as if for rolling, and then take it from the furnace and allow it to cool in the open. A scale about ⅛ in. thick will be formed which may be easily knocked off, exposing to view any skin holes which approached to within 1/16 in. of the ingot surface. Their depth may then be explored with a pin or fine wire.

Skin holes are thought to be formed chiefly by hydrogen, though to the writer's knowledge the gas they contain has not yet been analyzed by itself. In partly killed steels these holes are due to insufficient gas-solvent present and in imperfectly effervescing steels to inadequate evolution of gases in the molds, due to too little oxygen in or too high temperature of the metal, one or both. The milder the boil in the furnace (for a given carbon content in the unfinished steel), the nearer the skin holes will be to the surface of the ingot while the milder the effervescence in the mold, the fewer of these gas bubbles will be dislodged and the more will remain forming skin holes.

Intermediate holes occur only in effervescing steels which have low carbon, practically always under 0.40 per cent. When there is proper effervescence these holes are in a zone 2 or 3 in. in from the surface, but, when the boil in the furnace and evolution of gas in the molds is not brisk enough, they may be any less distance in. They are thought to be formed chiefly by carbonic oxide gas. When there is no effervescence, which occurs when the steel is cast excessively hot, there are no intermediate holes.

Central holes, which are thought to be formed chiefly by nitrogen and ammonia, are usually, when present, located at random in the central portions of the ingot. They are to be found in imperfectly killed steels and normally occur in full effervescing steels.

Unsound or Wild Steels

All steels which rise in the mold after being teemed and during solidification are relatively unsound compared with settling or standing steels. They are sometimes referred to as "wild," a somewhat ambiguous term frequently used in describing "off" kinds of steel, presumably those which evolve considerable gas in the molds without being full effervescing, and particularly rising steels. When any steel is rising in the mold, the gas holes which cause it to rise are being formed at that moment in the metal —then solidifying—when it is in the mushy stage through which all but extremely low carbon steels pass. It is then coherent enough to hold the bubbles as they form and keep them from escaping by rising, and yet weak or plastic enough for the gases being liberated to displace the metal and make the holes. When the rising occurs immediately after teeming, say, in one or two minutes in a 3-ton ingot, it is caused by skin holes; that which takes place or continues later by central holes. Gases which separate in the fluid steel quickly rise to the top and escape as in effervescing steel and do not form gas holes.

The development of the practice of making imperfectly killed steels seems to have aimed at following crucible steel practice in which steel is killed by holding it molten in the pot. When a degree of quality in the partly-killed steel was reached which enabled marketable goods to be produced, the matter rested and further improvement was not sought. When, however, steel was called for, having good tangential or transverse properties as well as longitudinal, partly killed steels were not good enough.

Rising Steels and Corrosion

Though actual results are not at hand it is thought that rising steels are more susceptible to corrosion than others. Particularly this is thought to be true of low carbon steels and notably of steel fence wire. Even though made of rising steel it may look all right, but is well known to have a short life when exposed to the weather.

Low carbon steel which rises in the mold is made in considerable quantity for a number of purposes including structural shapes, fence wire, nails and bars for reinforcing concrete, and some that is better made and rises only moderately is put into boiler, tank and ship plate and lap-welded pipe. Repeated hot-workings, that is, at least two heatings and rollings, are relied upon to obliterate in some measure defects in the ingots, particularly those at the surface.

Low carbon steel may rise because it is either (1) imperfectly killed or (2) imperfectly effervescing. These two shortcomings give quite different results. The first will result in skin holes in the upper part of the ingot and in relative freedom from them in the lower, while in the second case the lower part will be infested with skin holes and the upper be comparatively free.

Low carbon steel not intended to effervesce may be partly killed so as to rise but a moderate amount in the molds. The method is to work it out in the furnace to a gentle boil by holding it without addition of ore, having the slag rather low in iron, say under 10 per cent of Fe and until the metal is fairly well cleaned of oxides by the reducing action of the carbon, and then to give it at the end a rather large addition of ferromanganese. This alloy usually contains enough silicon to have some deadening effect in addition to that of the manganese, of which about 0.60 per cent may be present in the metal. A little ferrosilicon, about 0.02 or 0.03 per cent of silicon, or a little aluminum, one or two ounces per ton, are sometimes also added. Such steel will evolve some gas in the mold and will rise slowly after teeming, to check which it is usually quickly covered with sand, a steel plate being then pressed down on the sand by wedges driven under a bar or bars passing through the lugs of the mold.

Use of Bottle-Top Molds

Bottle-top molds are often used to aid further in preventing the steel rising. These are molds partly closed at the top by a flange around the inside of the ingot cavity but leaving an opening amply large for teeming the ingot. With square or nearly square molds this opening is usually circular but with rectangular molds it is also rectangular. Such molds are not suitable for effervescing steel, as they do not admit of the use of cap plates of the proper size and are not needed for killed steel. They constitute an attempt to cure by mechanical means a metallurgical ill.

Sometimes, in pronounced cases, as when the above-mentioned requirements of manufacture are not met, the growth of gas holes in size and number is so profuse, and the tendency to rise is as a consequence so great, that the covering with sand and plate referred to is not enough to hold the steel. The liquid steel may then, within a few minutes, force its way through the sand and squirt out, to the danger of persons nearby. If the sand and plate do hold it in, the mold itself may be raised from its stool and even topple over which, in a 3-ton square ingot, would require a pressure on the bottoms of the ingot of at least 40 lb. per sq. in.

Skin Holes and Rolling

The upper third or quarter of each ingot of this steel will usually be infested with harmful skin holes while the lower part may be free from them. Sometimes the skin holes are in clusters, each hole appearing as a dark spot which shows in the ingot when it is drawn hot from the heating furnace and taken to the rolls or press. Sometimes a cluster looks as though a charge of bird shot had been fired into the ingot at 25 or 30 yd. distance.

When the ingot is being rolled into slabs these skin holes, which are oxidized inside during heating, may cause numerous small tears or cracks on the unworked edges of the slab or, if not that, will form seams in blooms or bars or pits in plates. The location of these skin holes in the upper part of the ingot is quite different from that of skin holes in effervescing steel in which, if any are present, they are more plentiful in the lower part of the ingot, as already noted.

Rising low carbon steel when put into plates always requires at least two heatings and rollings in order that the plates may have good surfaces. The ingots are first heated and rolled into slabs by a blooming or slab-

bing mill and sheared while hot to the desired weights. The slabs are allowed to cool, when they can be inspected and any defects not likely to be cured by the second hot working may be chipped out.

Steels to be hot worked twice are naturally put into larger ingots, say from 5 to 10 tons weight, than those which are to be rolled at one heat into finished plates. In the second heating the steel is generally made hotter than in the first, up to or near the melting point of the scale, which favors the obliteration of defects in the slabs and also the welding of the gas holes.

One detriment of the larger ingots is that they are likely to contain more segregated impurities particularly in their upper central parts than smaller ingots. Two hot workings improve the physical properties of the steel, particularly its ductility, which might otherwise be deficient. A pulled test piece of this rising low carbon steel may have a fracture which presents a proper cup and cone but the fractured surfaces have a dull though quasi-silky appearance with rather short "fiber" as compared with the longer fibered, brighter and more silky fracture of full effervescing steel. This peculiarity of rising steel has the appearance of being due to sonims in the metal which in full effervescing steel are largely worked out by the churning action of the metal in the mold and are thus collected in the scum which forms on the top of the ingot as it solidifies.

This behavior of rising, low carbon, partly killed steel put into plates gives rise to two opposing arguments. Those who advocate two heatings and rollings claim, and truly, that their product is improved thereby, both as to surface and physical properties. Therefore their way is better even though the second rolling increases the cost. On the other hand those who make thick skinned ingots which they roll direct into finished plates at one operation truly claim that they get good surface and properties by so doing, that the steel must be right in every way to enable them to do so and the expense of the second rolling is unnecessary. It is not to the consumers' interest that inferior steel can be made to meet specifications by a second hot working.

For making comparatively thin plates under ¼ in. thick there is an advantage in two rollings instead of one as the slab may practically be heated hotter than the ingot and there is less draft to be given to bring it to the desired thickness. This lessens the time required and the plate may therefore be finished hotter, which will make it look better than if finished colder, and it may be rolled to a thinner gage.

(To be concluded)

Industrial Finance

The General Refractories Co. reports net sales of $2,442,456 for the June quarter, against $2,818,505 in the previous period. Net income after charges and reserves came to $83,570 against $216,417 in the first quarter.

The Eaton Axle & Spring Co. reports net earnings of $135,358 for the quarter ended June 30, after all charges. Earnings for the first six months of 1923 were equivalent to $1.12 a share.

Net income of the Inland Steel Co. for the second quarter of 1923 was $1,497,875 after interest, taxes, depreciation, etc. This compares with $2,170,489 in the corresponding period last year. Net profit for the six months of 1923 came to $3,668,364, against $2,459,635 a year ago.

The Asa S. Cook Co., Hartford, Conn., has discharged the receiver and reorganized with the following officers: John F. Cook, president and treasurer; John C. Cook, assistant treasurer; Alvin Hyde, secretary, and R. S. Crosby, superintendent. John F. Cook, who was general manager for 40 years up to 1916, has taken over entire charge of the business.

Report of the Wheeling Steel Corporation for the quarter ended June 30, last, shows a net loss of $170,986, after deducting $1,073,477 for repairs and maintenance and a total of $1,168,015 for depreciation, exhaustion of minerals and interest on bonds and bank loans. Surplus as of June 30 stood at $7,002,548, after the deduction of the loss for the quarter and dividends of the two classes of preferred stock amounting to $662,716.

President F. N. Hoffstot of the Pressed Steel Car Co., in commenting upon the company's decision to omit the quarterly dividends on common and preferred stock, due at this time, said that the company's business for the year had been below normal and that he had been advised by counsel that the company's charter provides that dividends on non-cumulative preferred stock for any fiscal year should be paid only from the net profits for that year and only after those profits had been determined at the end of such year. It was the judgment of the board that it would be inadvisable to declare a dividend on common stock at this time.

Net income of the United Alloy Steel Corporation and subsidiaries for the six months ended June 30, were $648,017 as compared with $1,972,585 in the same period last year. After payment of preferred and common dividends, there remained a surplus of $132,517, against $857,085 last year. Total income for the period reported came to $1,759,122, against $3,719,945 for the first half-year of 1923.

The Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, reports total income of $505,370 for the six months ending June 30, as against $668,525 in the same period of last year. Net income for the first half of this year, after preferred dividends, depreciation and sinking fund for bonds, was equal to $3.54 per share on the no par value common stock outstanding, against $6.87 per share for the first half of last year.

The Cooper Brass Works, Inc., Ogdensburg, N. Y., which was organized in January, 1920, and incorporated for $200,000 in February of the same year, has closed its doors owing to financial reverses. A week ago all employees, with the exception of several heads of departments, were dismissed. Total liabilities are in excess of $200,000 but it is expected that no effort will be made to plunge the concern into bankruptcy as it is thought possible that a purchaser may be secured who will take over the plant. The company was organized by Abraham Cooper and associates of Brooklyn, who also operated the Hudson Brass Co., that city, manufacturing brass plumbing goods and lighting fixtures.

The Central Steel Co., Massillon, Ohio, reports net earnings of $2,015,617 before payment of Federal taxes for the first six months of 1924. This is equivalent to earnings in excess of $7 a share for the common stock after payment of the preferred dividend. Earnings from operations amounted to $2,074,916. Miscellaneous receipts were $234,034, making a total of $3,208,591. Taxes, interest and other charges aside from Federal taxes were $1,191,343.

After expenses, but before deducting Federal taxes, the Kelsey Wheel Co. showed profits of $766,749 in the six months ended with June 30. That amount, after deducting preferred dividends, is equivalent to $6.81 a share on the $10,000 common stock capitalization. Net sales aggregated $8,443,986; expenses were $7,774,921, leaving a balance of $669,065. Income from other quarters brought the total balance up to $766,749. With $385,174 deducted for common and preferred stock dividends, there were a surplus of $381,570.

William T. Cobb, Rockland, Me., James C. Boyd, Portland, Me. and Geo. C. Wing, Jr., Auburn, Me. ave been appointed receivers of the Bath Iron Works, Ltd., Bath, Me. They have been authorized to complete all contracts pending, and, subject to further authorization by the court, undertake additional work.

The Driggs Ordnance & Mfg. Co., New Haven, Conn., plant has been ordered sold by the court. This action is the result of that recently taken by the Cincinnati Auto Body Co. Louis L. Driggs and Abe Lapides are the receivers.

The Hayes Mfg. Co., Detroit, manufacturing automobile body stampings and other sheet metal parts, is to be dissolved. On authorization of stockholders, directors of the company have filed a petition for dissolution, asserting that this action is necessary to protect the assets in view of the rapidly diminishing volume of sheet metal business obtainable. Assets are placed at about $1,700,000. Herbert P. Carrow, LaClanche Moen and the Union Trust Co. of Detroit have been appointed temporary receivers and operations will be continued until raw materials now on hand can be utilized. The company was incorporated in 1904.

Net income of the Superior Steel Corporation for the quarter ended June 30 amounted to $203,982, after expenses, Federal taxes, etc., equivalent to $2.03 a share on outstanding stock. This compares with net income of $160,038 in the previous quarter. Sales totaled $3,421,657 as compared with $2,081,169 in the first quarter, but surplus stood at $53,982 against $85,038.

Plans of New Companies

The American Radio Corporation, 3-11 North Central Avenue, Baltimore, will manufacture and distribute radio loud speakers. Henry J. Klaunberg, vice-president, advises that the company is in the market for castings, stampings and electrical windings, all of which will be bought on contract.

The Dow Transmission Corporation, 165 Broadway, New York, has been incorporated to manufacture an automatic gear shift for automobile transmissions. The American Car & Foundry Co. is interested in the new corporation, but it is not contemplated that there will be any extension of the car company's facilities to manufacture this device.

The Royal Steel Cabinet Co., 932 North Broadway, Baltimore, has been incorporated with capital stock of $50,000 to manufacture steel cabinets. The company at present is marketing a steel medicine cabinet for bathroom use and a good deal of the work is being done on contract. H. C. Spicer is secretary.

The Flynn-Wolff Bronze Foundry, Ardmore Street and Pennsylvania Railroad, Swissvale, Pittsburgh, recently incorporated under the laws of Pennsylvania with capital stock of $15,000, represents an expansion of the former Flynn Bronze Foundry, Pittsburgh. The company is engaged in the manufacture of brass, bronze and aluminum castings in a new plant of steel and fireproof construction at the address given. M. J. Flynn, who was formerly head of the Flynn Bronze Foundry, Pittsburgh, is president of the new company. Ervin A. Wolff, secretary and treasurer, for the past 20 years has been identified with Pittsburgh foundries, eight years as foundry superintendent, Bollinger-Andrews Construction Co., Pittsburgh, and for two years in a like capacity with the Pittsburgh Gray Iron Foundry. The company has moved equipment of the Flynn Bronze Foundry to the new plant and does not contemplate purchase of additional equipment at present.

The Walker Plastering Machine Co., 801 Calvert Building, Baltimore, is completing financial arrangements preparatory to manufacturing the Walker plastering machine. Officers of the company are: D. H. Walker, president; Daniel Richardson, vice-president, and Milton G. Miller, secretary and treasurer.

The Waugh Draft Gear Co., 809 People's Gas Building, Chicago, has been reorganized and its name has been changed to the Waugh Equipment Co. This company manufactures draft gears and buffing devices.

Bateman Bros., Inc., farm implement sales agent, with offices at 618 So. Washington Square, Philadelphia, has purchased a portion of the Walter A. Wood implement manufacturing plan at Hoosick Falls, N. Y., and has organized a new company to be known as the Walter A. Wood Implement Co. For the present, the main object of the new company will be to supply repair parts for machines now owned by former customers of the Wood company. The Wood plant has for some time been in charge of a receiver.

The X-Cell Corporation, 80 Fifth Avenue, New York, recently incorporated, has engaged in the manufacture of storage batteries. It is not in the market at present for materials or equipment.

The Torrington Specialty Co., Torrington, Conn., recently incorporated with authorized capital of $50,000, will manufacture household utensils, motor accessories and metal novelties. The company owns property in Torrington on which it will build a factory some time in the future, its work at present being done on contract, the assembling being taken care of in rented space in Torrington. E. W. Morgan, for many years identified with brass foundry products, is president of the company and in charge of operations. P. H. Allison is vice-president and J. A. Green, secretary and treasurer.

The Piatt Water Heater Co., Lansing, Mich., has been incorporated with $150,000 capital stock and succeeds to the business of a partnership known as the Piatt Co., which has been in existence for two years. The Piatt Water Heater Co. has leased a factory with 12,000 sq. ft. of floor space and will build water heaters of three types. The company will be in the market from time to time for materials and equipment. Its officers are: Ray Potter, president; E. C. Shields, vice-president, and Howard Piatt, secretary, treasurer and general manager.

The Florida Machinery & Supply Co. has been organized at Lakeland, Fla., with capital of $50,000, to handle a full line of mill supplies and machinery. The company will specialize in power plant equipment, machine tools, also dredging, conveying, elevating and hydraulic machinery. Leon Thompson is president and manager.

The Armstrong Electric & Mfg. Co., Newark, N. J., whose temporary address is in care of Edward H. Martling, 20 Branford Place, that city, purposes to engage in the manufacture and development of electrical appliances and will also offer experimental laboratory services.

The Detroit Auto Anti-Theft Device Corporation, recently organized with capital stock of $100,000, is having its product manufactured on contract. The device is in the form of a two-way concealed switch.

The Iceless Automatic Refrigerator Co., Scranton, Pa., recently incorporated with capital stock of $10,000, has purchased the stock of the Sorco Mfg. Co., Scranton, which will manufacture mechanical refrigerators for household use.

The National Soda Fountain Co., High Point, N. C., recently organized with capital stock of $100,000, of which $30,000 is paid in, will manufacture a portable soda fountain. The company is now negotiating for materials and equipment. Officers are, N. H. Irvin, president; R. T. Holton, vice-president, and J. A. Morris, secretary and treasurer.

The Kile Co., Inc., Lake Como, N. J., incorporated with capital stock of $25,000, will manufacture metal threads, wire products, etc. The company is occupying a leased building and is not in the market at present for equipment.

The Perfect Caster Mfg. Co., Newport Avenue at Eleventh Street, Long Beach, Cal., which has been engaged in business for about two years, has been incorporated with capital stock of $100,000, it being the company's purpose to dispose of additional stock for expansion. The company manufactures a quadruple ball bearing, string proof furniture caster. W. R. Darnell is owner.

The Metal Building Engineering Corporation of New Jersey, recently incorporated, has had its plant at Main Street and Hudson Terrace, Fort Lee, N. J., in operation for a few months. The shop has been equipped with power shears, punches, electrical welding apparatus, etc. Charles L. Tolford is president and treasurer, E. T. Tolford, secretary, and R. K. Gratigny is chief engineer.

Reports of Various Companies

Condensed income account of the American Locomotive Co. and subsidiaries for the first half-year showed net income of $2,883,185, after charges and taxes, compared with $5,404,596 in the six months ended Dec. 30, 1923. Surplus as of June 30 was $508,185 against $29,440 on Dec. 30, last, when $3,000,000 was set aside for additions and betterments. Net income of $2,348,664 was shown by the American Steel Foundries for the first six months. The Doehler Die Casting Co. reported net sales amounting to $3,272,263 and net profits of $178,194 after expenses and interest, during that period.

Other reports were as follows for the first half-year: Timken Roller Bearing Co., net earnings of $3,046,491 after taxes and depreciation; M. A. Hanna & Co., a deficit of $458,376 after interest, taxes, etc. The American Rolling Mill Co. showed net income for the June quarter of $1,494,272, after Federal taxes and interest, equivalent to $1.63 a share on outstanding common stock, compared with $887,367 in the previous quarter.

The July statement of the Pennsylvania Coal & Coke Co. clearly reflects the depression in the coke and coal business at that time. Gross earnings for that month were $435,044 or $243,397 less than for the corresponding month last year. After ordinary expenses there was a deficit of $14,665, whereas a year ago there was a profit of $88,000. The deficit after usual charges in July amounted to $47,120, against a profit of $51,671 last year. These charges involved depreciation and depletion, but not Federal taxes, thus the actual earnings on the company's capitalization was even poorer than shown by the aforegoing figures.

Directors of the Youngstown Sheet & Tube Co., Youngstown, have reduced the quarterly dividend on common stock, for the third quarter, from $1.25 to $1 per share. Reduced earnings due to lower selling prices and only a fair volume of business are the principal reasons for the action, although the company is spending a large sum on the improvement and modernization of its properties. Expenditures for this purpose will total $10,000,000 this year. For the first six months of the year, net earnings available for common stock were equal to $5.18 per common share, or more than the dividend requirements for the year at the old rate. Directors also declared the regular quarterly payment of $1.75 per share on preferred stock.

Machinery Markets and News of the Works

LAGGING SUMMER DEMAND

Late August Dull in Machine-Tool Market, but Outlook Is Improved

With Labor Day Over, Expectations of the Trade Are That Buying Will Be Better

THE last week of August brought no developments in the machine-tool markets that point the way to improved business, yet the general feeling is that there will be slightly more buying this month because of the return of plant executives to their desks and the natural preparation for fall activities. To say that the machine-tool industry is showing a "better tone" is merely to reflect the somewhat more optimistic expectations of tool builders and their representatives, and as yet there is little sound reason for such optimism except the spirit of hopefulness usually in evidence when the period of summer dullness is on the wane.

It is true that there have been some concrete examples of better business, but these have been so spotty as to be exceptions rather than the rule. In Chicago machine-tool sales of August were a little ahead of the two preceding months, but in some other sections this was not true, and August showed little or no improvement over the earlier summer months.

Railroad buying was a feature at Chicago, the New York Central placing orders for several tools for its Gibson, Ind., shops. Final action on the large Chicago school list has been postponed until Wednesday of this week.

Various railroads are said to be getting ready to issue fairly large inquiries. The Lehigh Valley has inquired for a number of tools, including two of large type. The Southern Pacific bought a combination journal and axle turning lathe.

New York

NEW YORK, Sept. 2.

MACHINE-TOOL salesmen on their rounds in the last two weeks in August found so many plant executives away on vacations that it was almost impossible to obtain decisions on the moderate volume of machine-tool business that was pending. With most of these executives back at their desks after Labor Day, it is expected that there will be some improvement in the rate of buying. Those who late last week had estimated August business were of the opinion that it would not exceed that of July, which was small, and probably in some particulars was even less satisfactory than that month. Miscellaneous railroad requirements constitute a good deal of the more important business of the week. The Lehigh Valley Railroad has made known that it requires a car-wheel borer, a locomotive journal turning lathe and two or three engine lathes. The Southern Pacific has bought a combinational journal turning and axle lathe. The Union Steel Casting Co., Pittsburgh, has ordered a 6-ft. tire boring and turning mill. The United Fruit Co. bought a 30-in. x 6-ft. planer.

The secretary, Public Works Supplies and Tenders Committee, Wellington, New Zealand, will take bids until Oct. 28, for electric equipment for the Lake Coleridge power scheme, including main switchboard, complete; 1 set bus reactors; 1 signalling system, complete; oil switches, complete with enclosures; isolating links, bus-bar and connections; cables; and spare parts for oil switches, as per specifications on file.

The Ernessen Electric Co., 118 Hamilton Avenue, Brooklyn, is said to be planning for the purchase of a drill press and other equipment.

Charles M. Spindler, 164 Montague Street, Brooklyn, architect, has plans under way for a two-story automobile service, repair and garage building on Third Avenue, near Atlantic Avenue, Brooklyn, 100 x 180 ft., to cost about $70,000, with equipment.

The American Locomotive Co., 30 Church Street, New York, has plans for the remodeling and improving of a portion of its plant at Schenectady, N. Y., with the installation of additional equipment, estimated to cost in excess of $50,000.

The Cespedes Sugar Co., operating an electrically-operated refining plant at Camaguey, Cuba, with plantation railroad system, warehouses, etc., is disposing of a bond issue of $3,000,000, a portion of the proceeds to be used for extensions and betterments. Antonio Perez is president.

The Beisel Spring-Wheel Corporation, 49 West Sixty-fourth Street, New York, has leased the entire building at 109 West Fifty-first Street and will equip for a new plant. The present works will be removed to the new location.

Thomas Golding, 597 Fifth Avenue, New York, architect, has plans under way and will soon take bids for the construction of a four-story automobile service, repair and garage building, 78 x 103 ft., at Broadway and 177th Street, to cost approximately $300,000, with equipment. Weinberger & Weishoff, 345 Madison Avenue, are the engineers.

R. Steel & Sons, Inc., 482 Vernon Avenue, Long Island City, operating a general forging and machine works, has acquired property adjoining its plant, extending from Vernon Avenue to Hamilton Street, and plans the early erection of a one-story addition.

The Long Island Railroad has filed plans for the erection of a one-story automatic power substation at Lincoln Avenue and 207th Street, Laurelton, L. I., for which foundations will be laid at once.

The American Consulate, Boulogne-sur-Mer, France, William W. Corcoran, vice-consul, is desirous of receiving in duplicate catalogs of American machinery for canvas production and dyeing equipment, for which an inquiry has been received from a company in France.

The Coca Cola Bottling Co., 138 East Forty-fourth Street, New York, will install an automobile service and repair works for company motor trucks and cars at its new three-story bottling plant at 345-49 East Forty-sixth Street, 60 x 200 ft. The entire project will involve $200,000, with machinery. Euell & Euell, 154 Nassau Street, are architects. Charles Culpeper is president.

Interests connected with the National Lead Co., 111 Broadway, New York, and the Williams Harvey Corporation, same address, have formed the Patino Mine & Enterprises, Consolidated, Inc., under Delaware laws. The new company is arranging for a stock issue of $30,000,000, the proceeds to be used for the acquisition of tin properties at Llallagua and Unica, Bolivia, and the Machaga, Marca & Unica Railroad, in this same district, and for general expansion, including the installation of equipment. Simon Patino and stockholders of the Chilean Tin Co., will be active in the new company, which will operate with a capital of $50,000,000.

The British Empire Chamber of Commerce of the United States, 25 Broadway, New York, has received an inquiry from a company in London desirous of getting in contact with American producers of pig iron, plates and steel sheets.

The Crane Market

A FEW new inquiries have appeared in the past week and awards have consisted largely of the purchase of cranes pending for several weeks or more. Before long formal inquiry is expected from the Southern Railway on a list of cranes for the shops and yards at Atlanta, Ga., Knoxville, Tenn., and Spartanburg, N. C. In locomotive cranes there has been very little activity. Sellers of used equipment have been seeking to locate a used 50 to 60-ton, 60 to 80-ft. boom locomotive crane for the Public Service Production Co., Newark, N. J. The inquiry by the Standard Oil Co. of New Jersey for a locomotive crane for the Eagle Refinery, Jersey City, N. J., is still active and purchase may be made in the near future. The Bethlehem Steel Corporation is reported to have closed on the list of cranes for the Lackawanna plant, Buffalo.

Among recent purchases are:

Lehigh Valley Railroad, 143 Liberty Street, New York, a 10-ton gantry crane from a Middle Western builder.

Dwight P. Robinson & Co., New York, a 10-ton, 26-ft. 4-in. span, handpower crane for the Duquesne Light Co., from the Reading Chain & Block Corporation.

Ray Consolidated Copper Co., 25 Broad Street, New York, a 40-ton, 50-ft. boom locomotive crane from the Industrial Works.

Carnegie Steel Co., Pittsburgh, a 10-ton, 83-ft. span, hot slab transfer crane for the Homestead works from the Alliance Machine Co. and a 20-ton, 45-ft. span, cinder handling crane for the Homestead works, from the Morgan Engineering Co.

Colorado Fuel & Iron Co., Pueblo, Colo., two 20-ton rail handling cranes to Shaw Electric Crane Co.

North Star Strawboard Mills, Quincy, Ill., four 4-ton single I-beam hand power cranes, 23-ft. span, complete with hoist and trolley, to Chisholm-Moore Mfg. Co.

Nugent Steel Castings Co., Chicago, one 1-ton 19-ft. span hand power crane with hoist and trolley to Chisholm-Moore Mfg. Co.

South Dakota Cement Commission, Rapid City, S. D., one 3-ton single I-beam hand power crane complete with hoist and trolley to Chisholm-Moore Mfg. Co.

Atchison, Topeka & Santa Fe, one 3-ton 13-ft. radius hand power post crane with trolley, Arkansas City, Kans., to Chisholm-Moore Mfg. Co.

Homer C. Kuhlman, 39 St. James Street, Kingston, N. Y., is taking bids for the erection of a two-story and basement automobile service, repair and garage building, 50 x 100 ft., on St. James Street, estimated to cost $55,000, with equipment. R. Graham, Kingston, is architect.

The Lower-Austrian Hydro-Electric Power Co., Province of Lower Austria, Europe, Metropolitan Trust Co., 120 Broadway, New York, fiscal agent, is disposing of a bond issue of $3,000,000, in the United States, the proceeds to be used in connection with a 10,000-hp. hydroelectric generating project, and other expansion.

George Dress, 116 West Thirty-ninth Street, New York, architect, has completed plans for the construction of a two-story automobile service, repair and garage building, 80 x 100 ft., at 1870-76 Park Avenue, to cost approximately $50,000, with equipment.

The Public Service Corporation, Public Service Terminal Building, Newark, N. J., operating electric light and power, and other utility properties, has authorized a bond issue of $20,000,000 a portion of the proceeds to be used for extensions and improvements.

The Hanovia Chemical & Mfg. Co., 233 New Jersey Railroad Avenue, Newark, N. J., has leased for a period of years a floor in the building at 59 Hoyt Street, and will use the property for the manufacture of quartz burners used for violet ray lamps. Equipment will be installed at an early date.

The Boston Excelsior Co., 26 Canal Street, Boston, has acquired the plant and property of the American Splint Corporation, bankrupt, at Kearny, N. J., consisting of a number of buildings totaling 70,000 sq. ft. of floor space, on 15-acre tract of land, fronting on the Passaic River. The new owner will take possession soon and remodel for a branch plant, with the installation of hoisting, conveying and other machinery for handling carload shipments. It is said that about $500,000 was paid for the plant.

The Arrow Electric Co., Hartford, Conn., manufacturer of switches and other electrical specialties, has acquired the plant and business of the Washington Porcelain Co., Washington, N. J., manufacturer of electrical porcelain heretofore, with probable later expansion. H. P. Humphrey, products. The works will be continued in operation as previously connected with the Washington company, in charge of plant operations, will remain in this capacity.

The Triplex Machine Tool Co., 50 Church Street, New York, is in the market for a used No. 23 or No. 24 Bliss knuckle joint embossing press, or an equivalent machine of about 250 tons pressure.

The New York Blue Print Paper Co., 96 Reade Street, New York, has awarded a general contract to Charles W. Randall, 201 Lake Street, West Hoboken, N. J., for an addition to its one and three-story plant on Terrace Avenue, Jersey City, N. J., including improvements in the present works, estimated to cost $35,000. John Helmers, 135 Summit Avenue, West Hoboken, is architect.

The Certified Ice & Refrigerating Co., 7 Water Street, New York, has tentative plans for the erection of a one-story ice-manufacturing plant at Middletown, N. Y., to cost in excess of $75,000, including equipment. J. A. Stiles is in charge.

Philadelphia

PHILADELPHIA, Sept. 2.

PROPERTY has been acquired by the West Philadelphia Buick Co. at Forty-eighth and Chestnut Streets, Philadelphia, 100 x 214 ft., for a two-story service, repair and garage building, estimated to cost $200,000, including land.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Sept. 9, for 35,000 ft. of steel cable for the Philadelphia navy yard, schedule 2605; also, at the same time, for 1600 lb. clinch brass nails for the same yard, schedule 2604.

The Six-Wheel Bus Co., Philadelphia, recently organized by officials of the American Motor Body Co., same city, will begin the manufacture of a special six-wheel automobile bus under license of the Goodyear Tire & Rubber Co., Akron, Ohio, which has developed the machine, utilizing a tandem drive, with two-body types, and six-cylinder, 70-hp. motor. Charles M. Schwab is chairman of the board.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, has arranged to take over the Susquehanna Power Co., recently organized to construct and operate a hydroelectric generating plant at Conowingo Falls, Susquehanna River, Md. The Philadelphia company will carry out this project, and will soon begin work on a power house, 120 x 700 ft. The initial installation of six turbines, each with capacity of 30,000 hp., with estimated cost placed at $15,000,000. A right-of-way for a steel tower transmission line from plant site to Philadelphia is being acquired.

The Ballinger Co., Philadelphia, architect, has plans for the erection of a one-story automobile service, repair and garage building, 236 x 295 ft., at Broad and Ridge Avenues, Potts and Melon Streets, estimated to cost $100,000, with equipment.

The Department of Public Works, Bureau of Survey, Philadelphia, has plans for the construction of a transformer building at the Northeast Sewerage Treatment Works, Wheatsheaf Lane.

The Foreign Trade Bureau, Philadelphia Commercial Museum, Thirty-fourth Streets, has received an inquiry (42584) from Albert Libik, Bajnok-Utca 30, Budapest, Hungary, desiring to get in contact with American manufacturers of machinery for the production of ball bearings, steels and cages; also an inquiry (42578) from the Porto Rico Import Agency, P. O. Box 233, Bayamon, Porto Rico, interested in reaching American manufacturers of bolts and nuts, cutlery and hardware; an inquiry (42586) from H. L. Seale, Speightstown, Barbados, British West Indies, interested in getting in contact with American manufacturers and exporters of iron and steel pipe and pipe fittings; an inquiry (42583) from the International Products Corporation, P. O. Box 666, Bombay, India, desirous of getting in touch with leading manufacturers of radio instruments and electrical appliances.

The Bath Portland Cement Co., Bath, Pa., has awarded a blanket contract to the Public Service Production Co., Public Service Terminal, Newark, N. J., a subsidiary of the Public Service Corporation, for the construction of a new mill at Sandt's Eddy, about 6 miles from Easton, Pa., on the Delaware River. The plant will have an initial output of

950,000 bbl. annually, with practically all machinery electrically operated. It is estimated to cost $1,500,000.

Manual training equipment will be installed in the three-story junior high school to be erected at Juniata and Susquehanna Streets, Lancaster, Pa., estimated to cost $275,000, for which bids are being received on a general contract on revised plans until Sept. 9. C. Emlen Urban, Woolworth Building, is architect.

The Philadelphia & Reading Coal & Iron Co., Pottsville, Pa., is arranging for the complete electrification of its local car and locomotive repair shops. Power will be secured from the new generating plant of the company at Good Spring, about 15 miles from the city.

The Cressona Auto Body Works, Cressona, Pa., recently organized, will operate a local plant in a leased building near the Schuylkill County fair grounds, for the manufacture of commercial and other automobile bodies.

The Common Council, Morrisville, Pa., is considering the installation of electrically-operated pumping machinery at the municipal waterworks, to replace present steam-driven apparatus.

The John Wood Mfg. Co., Conshohocken, Pa., manufacturer of tanks, boilers, and other plate products, has plans under way for the erection of a new one-story plant at the foot of Fayette Street, fronting on the Schuylkill River, to be equipped for the manufacture of water heaters and parts. It is expected to have the works ready for service before the close of the year. The company has recently taken over the property and business of the Bastian-Morley Co., Los Angeles, manufacturer of water heaters.

The J. E. Marsden Glass Co., Brookside Avenue, Ambler, Pa., has authorized the immediate rebuilding of the portion of its plant recently destroyed by fire with loss approximating $100,000, including equipment. The new building will be ready for machinery in October.

Buffalo

BUFFALO, Sept. 2

BIDS will be received by William F. Schwartz, commissioner of public works, Municipal Building, Buffalo, until Sept. 15, for one 10-ton electric traveling crane for installation at the low lift pumping station, filter plant, city waterworks, to be 3-motor, pendant operated.

Lewis & Hill, 892 Main Street, Buffalo, architects, have plans for the erection of a one-story automobile service, repair and garage building, 62 x 100 ft., at Kensington and Northumberland Roads, estimated to cost $50,000. Foundations will soon be laid.

Lewis M. Farrington, secretary, State Hospital Commission, Telephone Building, Albany, N. Y., and Barge Canal Terminal Building, Buffalo is asking bids until Sept. 17, for the installation of a water supply system, with pumping and accessory equipment at the Gowanda State Homeopathic Hospital, North Collins, N. Y. Plans at the office of the state engineer, offices noted.

The J. W. Pohlmann Foundry Co., 205 Baltz Avenue, Buffalo, will begin the construction of a one-story foundry addition, estimated to cost $20,000.

The Geneva Metal & Rubber Co., 23 Burrall Avenue, Geneva, N. Y., is considering plans for the rebuilding of the portion of its plant destroyed by fire Aug. 24.

Fire, Aug. 22, destroyed the manufacturing and repair works of the Hornell Radiator Co., Hornell, N. Y., automobile radiators with loss reported at $20,000. Plans for rebuilding are under consideration.

The Twin State Gas & Electric Co., 160 State Street, Boston, will begin the erection of its proposed one-story power plant at Hoosac Falls, N. Y., to cost approximately $100,000, with equipment. A general contract for superstructure has been let to the Fred T. Ley Co., Springfield, Mass.

Public Works Commissioner William Schwartz, Buffalo, is advertising for bids for a garbage disposal plant for Buffalo. No decision has yet been made as to whether the plant is to be for garbage reduction or garbage incineration.

Leonard F. Swanson, 409 Washington Street, Jamestown, N. Y., operating a machine and repair shop, has filed plans for the construction of a one-story brick machine shop at 2229 Washington Street, to cost $20,000, exclusive of equipment.

A contract has been awarded by John E. Roberts & Son, 1284 East Second Street, Jamestown, N. Y., for the construction of a one-story machine shop on Hopkins Avenue, to cost $20,000, exclusive of equipment. John E. Roberts heads the firm.

The Anderson Milking Machine Mfg. Co., Randolph, N. Y., has acquired land on East Second Street, Jamestown, upon which it is planned to erect a one or two-story factory building for the manufacture of milking machines. Machinery requirements will include lathes, presses, drills and transmission and conveying equipment.

The Rich Ice Cream Co., Buffalo, has awarded contract to the Metz Brothers Construction Co. for the construction of a two-story garage and repair shop on Pratt Street, to cost $50,000, including equipment.

William Nye, operating the Hornell Radiator & Repair Shop, Hornell, N. Y., is in the market for a drill and a lathe, replacing equipment recently destroyed by fire.

The Curtice Canning Co., Leicester, N. Y., has tentative plans under way for rebuilding its machine shop and blacksmithing shop, destroyed by fire, for which considerable machinery and equipment will be required. I. B. Cook is general manager.

New England

BOSTON, Sept. 2.

A LOCAL representative of possibly the largest New England maker of machine tools says August will be the least profitable month experienced in twenty years. Other important new and used machinery dealers are down to a minimum on bookings. Yet sentiment is more optimistic than it has been in weeks. Optimism is based on prospective business this month and thereafter rather than on immediate possibilities. The past fortnight has brought to light more private inquiry than is generally realized, mostly for single tools, to be sure. In addition, open inquiries, although mostly small, are increasing, particularly from railroads and large industrial plants.

The Boston & Albany Railroad has purchased a 5-ft. American radial drill and is in the market for a 36-in. heavy duty motor driven geared head lathe. The New York, New Haven & Hartford Railroad wants two small lathes. The Bangor & Aroostook Railroad is inquiring on six tools, three of them expensive ones, but it is doubtful if actual purchase is made for a month or two. One local house, working in cooperation with its New York office is engaged on specifications for a planer, boring mill, wheel press and smaller tools, aggregating something like $30,000, for a Cuban steamship company. The Fore River Works, Bethlehem Shipbuilding Corporation, Ltd., Quincy, Mass., wants a small amount of equipment due to greater activities at that plant, and a Lynn, Mass. electrical goods manufacturer wants a 16-in. x 8 ft. geared head lathe of new design. These citations demonstrate the variety of inquiry.

Textile machinery manufacturers, usually one of the backlogs of the machine tool industry, are expending little cash on new equipment because of the uncertain outlook of their business. The Whitin Machine Works, Whitingsville, Mass., textile machinery, will be closed this week because of the business depression. Another important factor in this field, having reopened following a period of idleness, is closing and reopening various departments in rotation; while still another is operating on greatly reduced schedules and with fewer operatives.

Stone & Webster, Inc., Boston, has purchased a 20-ton Northern stationary hoist for a Fall River, Mass., power plant. The company presumably will close shortly on a more important lifting machine for another plant.

The Vulcan Iron Works branch, Eastern Malleable Iron Co., New Britain, Conn., is to be enlarged by a three-story, 80 x 100 ft. addition, and an annealing unit also will be installed. A 5-ton crane and other miscellaneous equipment is required.

The American Tube & Stamping Co., Bridgeport, Conn., has foundations in for two continuous steel billet mills, which will double the capacity of the plant. One mill unit will be 72 x 120 ft.; the other 72 x 310 ft. The contract for the mills has been closed, but miscellaneous equipment is still to be bought.

The Continental Wood Screw Co., Mt. Pleasant Street, New Bedford, Mass., has rejected all bids for its proposed two-story, 80 x 100 ft. plant addition to cost approximately $50,000.

The Armour Patent Co., Foster Street, Worcester, Mass., has well under way the erection of a one-story, 60 x 100 ft. manufacturing plant at 326 Grove Street, that city.

Excavating has begun for a four-story, 27 x 100 ft. addition to the Edison Electric Illuminating Co., Dorchester, Boston, service station plant of the company. Bigelow & Wadsworth, 120 Tremont Street, Boston, are the architects.

The R. H. Clapp Rubber Co., Water Street, Hanover, Mass., has awarded contracts for $200,000 of plant units destroyed several months ago by fire. Miscellaneous equipment is required. C. B. Bonney, 40 Federal Street, Boston, is supervising requirements. Morton C. Tuttle Co., 31 St. James Avenue, Boston, are the engineers, and have the general contract.

The Mystic Iron Works, Boston, has awarded a contract for the major portion of foundations required for its Everett, Mass., blast furnace to the Aberthaw Constructing Co., Boston. Work will begin at once in the foundations for the furnace plant proper and will, it is expected, be completed within six months. The company also has awarded a contract to H. T. Gerrish, Boston for dredging a new channel past the Mystic Iron Works discharging dock site and widening the channel to the Consolidated Gas Co.'s property. Two dredges are operating in this work, removing approximately 5000 cu. yd. per day. The total removal will be in the neighborhood of 500,000 cu. yd.

The New Haven Gas Light Co., New Haven, Conn., is proceeding with the construction of a new 3000 hp. boiler plant, which has been designed to burn coke breeze and necessitates special conveying, crushing and burning equipment. Westcott & Mapes, Inc., New Haven, are the designing and supervising engineers.

The Carter & Hakes Machine Co., Winstead, Conn., maker of bench and plain millers, index leads, vises, etc., will go into voluntary liquidation the first week in October. Charles Kriser of the Industrial Plants Corporation, 25 Church Street, New York, will sell at public auction the entire business consisting of real estate and buildings; full machine shop equipment; jigs, dies and fixtures; patterns patents, etc.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Sept. 16, for 50,000 lb. slab zinc, for the Portsmouth, N. H., navy yard, for 47,000 lb. like material for the Boston yard, and 10,000 lb. for the Mare Island yard, schedule 2594.

The Tileston & Hollingsworth Co., 892 River Street, Boston, manufacturer of paper products, has taken out a permit to build a one-story addition for general manufacturing, estimated to cost $43,000.

The Marlboro Wire Goods Co., Marlboro, Mass., will begin the erection of a three-story plant, 70 x 150 ft., estimated to cost $150,000, including equipment.

The New Hampshire Power Co., Sunapee, N. H., is disposing of a preferred stock issue to total about $252,500, a portion of the proceeds to be used for extensions and improvements. F. D. Nims is president.

The Board of Education, Revere, Mass., plans for the installation of manual training equipment in its new two-story high school, estimated to cost $150,000, for which excavations are being made. Edward I. Wilson, 109 State Street, Boston, is architect.

B. F. Perkins & Sons, Inc., Crescent Street, Holyoke, Mass., has plans nearing completion for the erection of a one-story machine shop, 156 x 180 ft., at Williamansett, to cost about $40,000, with equipment. Lockwood, Greene & Co., 24 Federal Street, Boston, are architects and engineers.

The E. H. Clapp Rubber Co., Hanover, Mass., with headquarters at 49 Federal Street, Boston, has awarded a general contract to the Moton C. Tuttle Co., Boston, for the erection of a number of new buildings at its local works, estimated to cost about $75,000, to replace structures destroyed by fire several months ago.

Davis & Byam, Hildreth Building, Lowell, Mass., architects, have plans for the construction of a one-story automobile service, repair and garage building, 62 x 102 ft., on Fletcher Street, to cost about $45,000.

The Department of Public Works, Springfield, Mass., has tentative plans for the installation of an electric-operated pumping plant in connection with sewer extensions in the Entry Dingle Heights District, estimated to cost $50,000.

The Connecticut Co., 29 Church Street, New Haven, Conn., operating electric light and power properties, has plans under way for the construction of a one-story steam-operated power plant on West Main Street, Waterbury, Conn., 72 x 240 ft., reported to cost in excess of $150,000, with equipment. The company will also erect a one-story automobile service, repair and garage building, 230 x 330 ft., on adjoining site, for motor trucks and cars, to cost approximately $90,000, including equipment. H. R. Stamm and C. R. Harte are company architect and engineer, respectively.

Fire, Aug. 25, destroyed a portion of the works of the Potterville Bobbin Co., South Scituate, R. I., manufacturer of bobbins and other textile mill equipment, with loss estimated at $25,000. It is planned to rebuild.

The Board of Trustees, Tilton Seminary, Tilton, N. H., is considering the construction of a one-story steam power house, 40 x 50 ft., at the institution estimated to cost $47,000. It is expected to proceed with the work early in the coming year. A. S. Kellogg, 89 Franklin Street, Boston, is engineer.

The Baldwin Refrigerator Co., Burlington, Vt., has awarded a contract to the Kieslick Construction Co., same city, for the erection of a factory and boiler house. The plans call for a two-story and basement building, 60 x 360 ft. to cost $75,000.

The Rhode Island Malleable Iron Co., Providence, R. I., has awarded a contract to the C. I. Bigney Construction Co. for construction of a foundry. The plans call for a one-story building of brick and steel, 122 x 140 ft., costing $65,000. Additional foundry equipment will be required.

The United Smelting & Aluminum Co., Hampden, Conn., is planning to rebuild its plant destroyed some time ago by fire. The project calls for an expenditure of $100,000.

The Simonds Saw & Steel Co., Fitchburg, Mass., has awarded contract to E. W. Ward Co., Worcester, for the erection of a $120,000 factory in Fitchburg. Plans call for a three-story and basement, reinforced concrete building, 50 x 150 ft. Additional equipment will be required.

Pittsburgh

PITTSBURGH, Sept. 2.

THE tendency of buyers to defer purchases of machine tools until thoroughly satisfied that there is going to be a need for them is rather marked in this district. The past week has been an extremely quiet one in point of sales and the month, as compared with July, showed no appreciable gain in sales and some dealers find that it was little better than June, which was the slowest month of the year. It is usually the case that machine tool orders follow improvement in the steel and metal working industries two to three months later and, that premise being sound, the gain in the activities of the steel industry is yet to be reflected in machinery sales. Much business is before the trade, but it is slow in closing and new inquiry is moderate. Crane business shows no improvement. The Carnegie Steel Co. closed on two cranes for its Homestead works, but no other awards of importance are reported in this territory. Inquiries are few.

Contract has been let by the Westinghouse Electric & Mfg. Co., East Pittsburgh, to the Scholl Wolfe Co., West Fourth Street, Mansfield, Ohio, for the erection of a one and four-story addition to its Mansfield works, 160 x 360 ft., for which foundations will be laid at once. Bernard H. Prack, Martin Building, Pittsburgh, is architect and engineer.

Motors, controls, conveying equipment, factory trucks and other mechanical equipment will be installed in the three-story and basement plant to be erected by the Erie Lithographing Co., Erie, Pa., 80 x 330 ft., at State and Fourth Streets, estimated to cost $200,000, with machinery. Harry Hake, Telephone Building, Cincinnati, is architect.

Manual training equipment will be installed in the three-story high school to be erected at Etna, Pa., estimated to cost $230,000, for which bids are being asked on a general contract. Press C. Dowler, Magee Building, Pittsburgh, is architect.

A. I. Cottrill, Glenville, W. Va., is planning for the installation of a local waterworks, and has inquiries out for equipment, including a 75 to 100 hp. gas engine, centrifugal pumps, etc., for a daily capacity of 500,000 gal.

The Jones & Laughlin Steel Corporation, Pittsburgh, is perfecting plans for the development and operation of a tract of coal property, totaling about 15,000 acres, on the Monongahela River, near Dunkard, W. Va., and will provide electric power equipment, mining machinery, mine cars, etc., for large output. It is expected to begin work early in November.

Manual training equipment will be installed in the three-story junior high school to be erected at Charleston, W. Va., estimated to cost $300,000, for which a general contract has been let to the Wallace Knight Construction Co., Commerce Building. Warne, Tucker & Patterson, Masonic Building, are architects.

The Crandall Mining Co., Charleston, W. Va., is planning for the purchase of additional mining machinery and mine cars for installation at its properties at Altman, W. Va., where a tract of 600 acres of coal land is being developed. O. M. Crandall is head.

The Duquesne Light Co., 435 Fourth Avenue, Pittsburgh, is said to have concluded arrangements for the purchase of a tract of property at Shippingport, Beaver County, Pa., and will use a portion of the site for a new steam-operated electric generating plant, to cost in excess of $7,500,000, with machinery. It is intended to duplicate the present power station at Colfax. It is also proposed to install an automatic power substation in Rochester Township, removing the present station at Junction Park to this location and installing additional equipment.

F. Y. Daniels, Factoryville, Pa., is in the market for a 400 to 600 ft. capacity steam roller, with auxiliary equipment.

Cincinnati

CINCINNATI, Sept. 1.

THE machine tool industry is showing a better tone, and with some companies orders are more numerous than has been the case for weeks. Inquiries, too, are more numerous, and apparently are being sent out with intention to purchase. With greater activity in the automotive and agricultural implement industries, it is felt that machine tools will be purchased by several large manufacturers who postponed buying last spring. The railroads, too, are looked upon as possible heavy buyers. The Southern Railway is reported to be preparing a large list for various shops now under construction, and the Louisville & Nashville Railroad is expected to issue a list for its new Corbin, Ky., shops in the near future. The Norfolk & Western Railroad bought several tools last week, as did the Big Four. The Standard Sanitary Mfg. Co. has been purchasing from time to time for its Louisville, Ky., and Baltimore plants, and is expected to be a fairly active buyer for some time to come. The large electrical manufacturing companies, which curtailed purchases during August, are expected to enter the market again in September. Local dealers report business fully up to the total of July and June, made up mostly of orders for the smaller tools.

The G. A. Schacht Motor Truck Co., Cincinnati, manufacturer of motor trucks, has purchased property in Long Island City, N. Y., and will, about Oct. 1, begin the erection of a plant for the manufacture of motor trucks. The new plant will have 60,000 sq. ft. of floor space, and will be supplied with modern equipment. G. A. Schacht is president.

Fire destroyed the power house, boiler room, tipple and blacksmith shop of the Empire Coal Co., Empire, Ky., causing a loss of $30,000. The plant will be rebuilt at once.

The Toledo Auto Parts Co., 716 Cherry Street, Toledo, Ohio, is considering the erection of a one-story service, repair and garage building on Cherry Street, estimated to cost $50,000, with equipment.

The Toledo Edison Co., Toledo, Ohio, is disposing of a preferred stock issue of $1,470,000, a portion of the proceeds to be used for extensions and improvements. B. C. Adams is vice-president and general manager.

The Board of Education, Berea, Ohio, plans for the installation of manual training equipment in its proposed three-story high school, estimated to cost $400,000.

The Cook Furniture Co., Columbia, Tenn., recently organized, has leased a building at Tenth and School Streets, and will establish a plant at this location for the manufacture of furniture. The machinery installation will be arranged at an early date. It is proposed to equip a department for the production of toys. A boiler plant will be installed. Miles Cook is president.

The Chattanooga Boiler & Repair Co., Chattanooga, Tenn., recently organized with a capital of $25,000, will operate a plant in the Alton Park section for boiler repair work. A department will be arranged fo the manufacture of smoke eliminating equipment. J. J. Gallagher, 210 Baldwin Street, is president.

The Cumberland Pipe Line Co., Leander, Ky., is arranging plans for the rebuilding of the portion of its storage and distributing plant, recently destroyed by fire with loss reported at $85,000, including equipment.

The Board of Education, Salineville, Ohio, plans for the installation of manual training equipment in its proposed new high school, estimated to cost $210,000, for which plans are being prepared by J. Kerr, Griffin Street, Clairsville, Ohio, architect.

E. W. Gillespie, 606 Asylum Street, Knoxville, Tenn., has inquiries out for a power ditcher, second-hand, good condition.

Plans are under way by the Winchester Water Works Co., Winchester, Ky., for the construction of a one-story pumping station and power house, to cost $60,000, for which centrifugal pumps and other equipment will be required.

Milwaukee

MILWAUKEE, Aug. 30

MACHINE-TOOL sales during August represented at least a small gain over July and June, but like other months this year fell below the corresponding periods of 1923. Improvement is still going on, but at a relatively slow rate. Foundries and machine shops are sharing in slowly increasing orders. There is an absence of major industrial construction of the character that involves large lot equipment purchases. Industrial employment, however, is showing the first gain this year, the decline which set in early having been checked at the middle of August. August tool production was of a somewhat higher order than in July.

The Briggs & Stratton Co., Milwaukee, has purchased the entire interests of the Toledo, Ohio, Automotive Products Co., and is now consolidating the two works at the Milwaukee plant without immediate extension of buildings. Some of the Toledo equipment will be offered for sale. The two concerns manufacture automobile body hardware, locks, ignition switches, electric horns, coils and window regulators. Ray W. Randall, factory manager at Toledo, has become associated with the Briggs & Stratton Co. in a similar capacity. He was vice-president and general manager Falls Motor Corporation, Sheboygan Falls, Wis., prior to joining the Toledo company four years ago.

Schroeder Brothers, 1484 Forest Home Avenue, Milwaukee, conducting a general machine and repair shop, are erecting a one-story brick and concrete shop addition, 32 x 60 ft., and will install a small list of new and used equipment. The business is owned by Gustav A. and Paul Schroeder.

H. A. Poppert & Son, 421 Third Street, Milwaukee, manufacturers of steam pressure cookers, die castings, etc., are inquiring for a 24-in. x 12-ft. engine lathe, two polishing lathes and several other items of equipment. As already noted, this concern has purchased the former plant of the Bull Dog Tractor Co. at Fond du Lac, Wis., which is being retooled for immediate occupancy.

The Lavine Gear Co., 60-80 Keefe Avenue, Milwaukee, manufacturer of steering gears and other automotive units and parts, has increased its capital stock from $750,000 to $1,000,000. While no immediate plant extension is contemplated, steps are being taken to increase the output and this requiries frequent additions to the equipment. Herman A. Uihlein is president, and A. H. Westphal, secretary.

Chadwick Brothers, 432 Broadway, Milwaukee, have incorporated their business as Chadwick Brothers Co., with a capital stock of $20,000. The concern deals in machinery of all descriptions as manufacturers' representative and sales engineer, but may undertake the manufacture of several lines of equipment within a short time. The principals are John B. and Robert Chadwick.

South Atlantic States

BALTIMORE, Sept. 2

PLANS have been filed by the Black & Decker Mfg. Co., Baltimore, manufacturer of electric drills and other machinery, for the erection of a building on Joppa Road, near Pennsylvania Avenue, adjoining its present works, estimated to cost $60,000. Foundations will be laid at once.

The purchasing agent, Government Printing Office, Washington, will take bids until Sept. 8, for one electric traveling crane and hoist; also Sept. 12 for one 30-in. belt conveyor.

The Milstead Mfg. Co., Conyers, Ga., will soon begin the construction of a hydroelectric power development on the Yellow River, estimated to cost about $100,000. Contract for a power dam has been awarded to the Hook & White Co., Charlotte, N. C.

The Bureau of Supplies and Accounts, Navy department, Washington, will receive bids until Sept. 9 for two motor

generators and starters complete, schedule 2612; for a quantity of miscellanous monel metal for the Key West yard, schedule 2602; and for 1000 steel forgings for the Newport yard, schedule 2621.

W. R. Kline, 4104 Fifth Street, N. W., Washington, has inquiries out for a 25 hp. steam engine and accessory equipment; also for machinery for a saw mill.

Fire destroyed a portion of the municipal electric light and power station at Robersonville, N. C., with loss estimated at $25,000, including equipment. It is planned to rebuild.

The Board of Estimates, Baltimore, has authorized construction of a one-story machine and repair shop for the Fire Department at a cost not to exceed $65,000, with equipment. Charles H. Osborne, building inspector, is in charge.

The Board of Education, Claymont, Del., plans for the installation of manual training equipment in its proposed elementary and high school.

The general purchasing officer, Panama Canal, Washington, will take bids until Sept. 10, for a quantity of brass bolts, foot bolts, lock nuts, grip nuts, machine screws, wood screws, resistance wire, engine carburetors, fire brick and kindred products, circular 2359.

The Columbia Coal Development Corporation, Grace Street Bank & Trust Building, Richmond, Va., is arranging for immediate development work on 26 acres of coal lands in Henrico County, and plans for the installation of steam power equipment, mining machinery, mechanical fans, etc. The initial work and equipment will cost about $75,000. It is intended to develop a capacity of 2000 tons per day. C. Ridgeway Moore is president. The company was formed recently with a capital of $300,000.

The H. A. Garrison Brass Co., Dowd Road, Charlotte, N. C., is considering the rebuilding of the portion of its plant recently destroyed by fire.

The quartermaster, United States Marine Corps, Washington, will take bids until Sept. 8 for a quantity of machanical equipment, including 102 twist drills, 2 adjustable tap wrenches, 4 drill sockets 12 center drills, 4 sets check nut wrenches, 4 set screw extractors, 4 micrometers, 1 portable electric drill, brass welding and brazing wire, 2 sets bearing scrapers, 8 sets socket wrenches, 150 fuses, 3 grinding wheels, 4800 hexagon nuts, 1 portable forge, 4 rivet sets, 1 set valve tools, 42 engineers' wrenches, 18,500 cap screws, 13,000 cotter pins, 21,000 lock washers, 4 gross hacksaw blades, 1 combination cutting and welding outfit, and other kindred products, schedule 129.

The Bedford Hardware Co., Bedford, Va., is inquiring for a mechanical blower system to handle shavings and sawdust.

The National Soda Fountain Co., High Point, N. C., recently organized with a capital of $30,000, has leased a building and will install equipment for the manufacture of portable soda fountains. N. H. Irwin is president.

The Bureau of Foreign and Domestic Commerce, Washington, has information regarding an oil company in the vicinity of Halifax, N. S., which plans to install additional machinery at its oil refinery to cost about $200,000, Reference No. 140,397.

The post quartermaster, marine barracks, Parris Island, S. C., will take bids until Sept. 6, for power and machinery supplies, including turnbuckles, injectors, drills, wire rope clips, check valves, brass gate valves, brass globe valves, gage cocks, nipples, elbows, machine belts, grate bars, single spring pressure gages, etc., as per list on file.

The Cofac Mfg. Co., Inc., 110 West Berkley Avenue, Norfolk, Va., is desirous of getting in touch with manufacturers in position to manufacture and furnish stamped steel galvanized lock nuts, with ½-in. pipe thread, in quantities of 500,000 and 1,000,000.

Pacific Coast

SAN FRANCISCO, Aug. 27.

PROPERTY at Phoenix, Ariz., comprising about 40 acres, has been purchased by the Atchison, Topeka & Santa Fe Railway Co., Kerkhoff Building, Los Angeles, as a site for new locomotive and car repair shops, for which it is proposed to have plans drawn at an early date.

The Board of City Trustees, Anaheim, Cal., is arranging a bond issue of $240,000, proceeds to be used for the construction of a municipal electric power plant. The city engineer is in charge.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, has secured permission to issue bonds for $12,500,000, a considerable portion of the proceeds to be used for extensions and improvements, including a proposed hydroelectric power project in the Mount Shasta district.

The Crown-Williamette Paper Co., Pittock Block, Portland, Ore, has tentative plans under consideration for the construction of a new paper mill at Cathlamet, Wash., consisting of a number of one-story units, with power house and machine shop. The estimated cost is reported in excess of $500,000.

The Schott-Halsey Motor Co., First and A Streets, Yakima, Wash., is planning for the construction of a one-story service, repair and garage building on South Fourth Street, 125 x 140 ft., estimated to cost $45,000, with equipment.

The Quality Enameling & Porcelaining Co., 1634-40 Howard Street, San Francisco, manufacturer of enameled metal products, is disposing of a stock issue of $450,000, proceeds to be used for the construction of a plant. Lyle P. Nutcher is president.

The Common Council, Fullerton, Cal., has authorized the securing of estimates of cost for a municipal electric light and power plant. W. C. Record, city engineer, is in charge.

Sachs & Sons, Downey, Cal., local automobile representatives, have plans for a one-story service, repair and garage building, 100 x 230 ft., on North Crawford Street, near Fifth Street, estimated to cost $60,000, with equipment. A parts department and machine works will be provided.

The Associated Oil Co., San Francisco, has secured permission from the Board of City Trustees, Auburn, Cal., for the construction of a new storage and distributing plant on local site, estimated to cost $100,000, with equipment.

Chicago

CHICAGO, Sept. 2.

MACHINE tool sales in August were generally better than in July; in fact, two representative selling agencies report doing twice the amount of business of the previous month. Railroad buying was the feature of the market during the past week. The New York Central placed orders for a No. 5 plain milling machine, two 24-in. motor-driven engine lathes and a turret lathe for its Gibson, Ind., shops. Final action on the extensive local school list has been deferred until Wednesday of the current week, when a special meeting of the Board of Education will be held. Single orders for machine tools are coming from a greater variety of sources, but it is still true that inquiries considerably exceed actual purchases. While orders from automobile companies have not been conspicuous of late, both the Studebaker and Nash companies have made occasional purchases to round out their present equipment. The Studebaker company recently ordered three turret lathes. Joseph T. Ryerson & Son has purchased a motor-driven 2-in. 72-in. wide plate shear from the Morgan Engineering Co. for its Chicago warehouse.

The By-Products Coke Corporation, 11159 Torrence Avenue, Chicago, has awarded a contract for a two-story boiler house, 50 x 110 ft., to cost $67,000.

The Atchison, Topeka & Santa Fe has awarded a contract for the construction of a one-story shop building at Topeka, Kan., to cost $40,000.

The Cleveland, Cincinnati, Chicago & St. Louis has awarded a contract to the Walsh Construction Co., Chicago, for the construction of a one-story battery works at Beach Grove, Ind., to cost $30,000.

The Rockford Electric Co., Rockford, Ill., is disposing of a bond issue of $924,000, a major portion of the proceeds of which are to be used for extensions and improvements to its local plant, sub-station and distribution lines.

The Board of Education, O'Fallon, Ill., plans for the installation of manual training equipment in the proposed two-story high school, estimated to cost $110,000, for which bids are being received on a general contract. Reister & Rubash, Murphy Building, East St. Louis, Ill., are architects.

The Common Council, Fairbault, Minn., is considering the construction of a municipal electric light and power plant. S. M. Andrews is city recorder in charge.

Manual training equipment will be installed in the new two-story high school to be erected at Duluth, Minn., estimated to cost $750,000. Holstead & Sullivan, Palladio Building, are architects.

The Minneapolis Garage Co., 3411 Hennepin Avenue, Minneapolis, Minn., will hold in temporary abeyance the establishment of its proposed service, repair and garage

building at Second Avenue, North, and Third Streets, consisting of the remodeling of an existing nine-story industrial building, 135 x 162 ft., estimated to cost $100,000, with equipment. Long & Thorshov, Andrus Building, are architects.

Manual training equipment will be installed in the two-story junior high school to be erected at Twenty-third Avenue and J Street, Cedar Rapids, Iowa, estimated to cost $200,000, for which bids are being received on a general contract until Sept. 8. Otis L. Leefers, Board of Education, is engineer, in charge.

The Keystone Arsenic Co., Keystone, S. D., is planning for the construction of a steam-operated electric power plant for service at its mill and mining properties, reported to cost about $45,000.

The Domestic and Foreign Commerce Department, Chicago Association of Commerce, 10 South La Salle Street, has received an inquiry (4005) from a concern operating a foundry at Essen, Germany, in the market for a quantity of scrap iron, old copper and brass.

The Superheater Co., East Chicago, Ind., will begin the construction of a one-story power house at its plant, 151st Street and Railroad Avenue, to cost about $45,000, for which a general contract for steel superstructure has been let to the Kenwood Bridge Co., Chicago.

The City Council, Pierre, S. D., has plans under way for extensions and improvements to the municipal light and power plant, to include the installation of a 400 horsepower boiler, with auxiliary equipment and complete rebuilding of its distributing lines, sub-stations, etc. J. H. Starkey, City Hall, is in charge.

The Crane Co., 836 South Michigan Avenue, Chicago, is receiving bids through Graham, Anderson, Probst & White, architects, on a one-story structure, Building, 4, 5, 6 and 7, 500 x 520 ft., to contain a foundry, mill room, machine room, annealing department, and core room, Kedzie Avenue and Forty-first Street.

The J. L. Clark Mfg. Co., manufacturer of cans and lithographed can labels, Rockford, Ill., has awarded a contract for a one-story addition, 190 ft. square, and a power house, to cost $200,000.

The Clapp, Riley & Hall Equipment Co., 14 South Canal Street, Chicago, contemplates the erection of a one-story factory, 125 x 126 ft., Sixty-first Avenue and One Hundred Twenty-ninth Street.

The Brockman Mfg. Co., 664 North Wells Street, Chicago, has awarded a contract for a four-story factory and warehouse, 72 x 100 ft., 416-30 West Huron Street, to cost $100,000.

The W. F. Hall Printing Co., 466 West Superior Street, Chicago, has awarded contracts for a one-story shop, 500 x 700 ft., and a two-story office and shop building, 100 x 500 ft., 4600-52 Diversey Avenue, to cost $2,000,000.

Indiana

INDIANAPOLIS, Sept. 2

CONTRACT has been awarded by the Indiana Steel & Wire Co., South Council Street, Muncie, Ind., to Albert J. Glaser, 616 South Mulberry Street, for the erection of two additions to its plant, consisting of a one-story annealing building, 220 x 320 ft., and one and two-story machine shop, 60 x 140 ft.

The Board of Public Works, City Hall, Indianapolis, has awarded a general contract to Latham & Walters, State Life Building, for the construction of a one-story municipal automobile service, repair and garage building, 200 x 200 ft., at Alabama and New York Avenues, estimated to cost $170,000, with equipment. F. B. Hunter, State Life Building, is architect.

The Wayne Machine Co., 934 Fort Wayne Avenue, Indianapolis, has preliminary plans under advisement for a new one-story plant on local site. It is expected to select an architect to prepare detailed drawings at an early date and to begin construction early in the coming year. E. B. Knickerbocker is president.

The City Council, Decatur, Ind., has awarded a general contract to the Moon & Butler Co., Decatur, for the construction of a one-story automobile service, repair and garage building, for municipal motor trucks and cars, reported to cost about $40,000, with equipment.

A manual training department will be installed in new addition to be erected at the high school, Dana, Ind., by the Dana Board of School Trustees, E. C. Dales, president, estimated to cost $70,000. Bids will be asked in about 60 or 90 days. H. F. Fillinger, Dana, is architect.

H. M. Byllesby & Co., Chicago, operating electric light and power properties, have plans for the construction of a hydroelectric generating plant at Shipping Port, an island in the Ohio River, between Jeffersonville, Ind., and Louisville, to cost in excess of $300,000.

Gulf States

BIRMINGHAM, Sept. 2.

PLANS have been arranged by the National Cement Co., Ragland, Ala., for the immediate rebuilding of the portion of its local mill, recently destroyed by fire with loss reported at $1,000,000, including equipment. The machine shop, packing house, bag and stock house sustained the greatest loss. New machinery will be installed.

R. E. Boggs, Age-Herald Building, Birmingham, Ala., machinery dealer, has inquiries out for 10 to 20 steel dump cars, two-way, 36-in. gage, good condition.

Fire did considerable damage the past week to the large machine shops and foundry of the Hardie-Tynes Mfg. Co. in Birmingham, the origin being an exploding engine. A portion of the plant was saved and also some of the work in process. As rapidly as possible machinery is being replaced and work taken up again, but meanwhile some of the contracts will probably be distributed to other shops. The loss by the fire was estimated at more than $500,000, covered by insurance.

R. E. McCaskell, Electra, Tex., has been granted permission by the Common Council, Littlefield, Tex., to install and operate a steam-driven electric light and power plant for local commercial service.

The Municipal Gas Department, St. Petersburg, Fla., has awarded a general contract to John C. Wright, 821 North Fourteenth Avenue, for the erection of a one-story mechanical shop at Third Avenue and Twelfth Street. It will be used primarily for meter repair and meter parts manufacturing.

Marvin Wise, 2220 Highland Avenue, Birmingham, Ala., will begin the construction of a one-story automobile service, repair and garage building, 150 x 150 ft., estimated to cost $50,000, with equipment, for which a general contract recently was let to the Inglenook Construction Co., 4011 First Avenue.

The Common Council, Vernon, Tex., will take bids until Sept. 9 for one 300 hp. oil burning engine, direct-connected to a 2300-volt electric alternator, 3-phase, 60-cycle, with exciters, switchboard and accessory equipment.

The Buckman Corporation, Graham Building, Jacksonville, Fla., has acquired the drydock and waterfront property on the St. Johns River of the United States Shipping Board, and will establish a ship repair plant at this location. The drydock will be extended and improved, and necessary equipment installed. A lease has been concluded with the city for the project, which is estimated to cost about $150,000. H. H. Buckman is president.

St. Louis

ST. LOUIS, Sept. 2

APPLICATION has been made by the Arkansas-Missouri Power Co., Blytheville, Ark., for permission to increase its capital from $200,000 to $1,000,000, a considerable portion of the proceeds to be used for extensions in power plants and system.

W. King & Associates, Inc., Planters Building, St. Louis, has awarded a general contract to the Gamble Construction Co., 620 Chestnut Street, for the construction of a three-story automobile service, repair and garage building, 125 x 172 ft., at Broadway and Walnut Streets, estimated to cost $200,000, with equipment.

The Ozark Iron Ore & Mfg. Co., Poplar Bluff, Mo., has preliminary plans under advisement for the construction of a new concentrating mill in the Hendrickson district, with estimated cost placed at $300,000.

The Board of Education, Great Bend, Kan., plans for the installation of a manual training department in its new two-story and basement high school, estimated to cost $250,000, for which a general contract has been let to H. W. Underhill & Co., 131 North Emporia Street, Wichita, Kan.

The Batesville White Lime Co., Bethesda, Ark., is perfecting plans for the immediate development of limestone properties in that section, and will establish a new community to be known as Limedale. It is purposed to construct an industrial railroad, install quarrying machinery, conveying equipment, etc., with commercial reduction plant and power house. The entire project will involve approximately $200,000.

The Riefling Automobile Co., 2331 South Jefferson

Avenue, St. Louis, has plans in progress for the construction of a two-story service, repair and garage building at 2341 South Jefferson Avenue, 75 x 120 ft., to cost about $50,000, with equipment. E. J. Hess, 3228 Magnolia Avenue, is architect.

The St. Louis Bale Tie Co., St. Louis, has preliminary plans for the rebuilding of the portion of its plant recently destroyed by fire with loss estimated at $25,000, including equipment.

The Board of Public Service, City Hall, St. Louis, has awarded a general contract to the Fruin & Colnon Construction Co., Merchants Laclede Building, for the erection of a three-story and basement building, 195 x 270 ft., at Broadway, Lucas, Sixth and Morgan Streets. The main floor will be equipped as a public market, with the installation of refrigerating equipment. The two upper floors will be used for an automobile service, repair and garage works, with appropriation of about $200,000 for equipment, fixtures, etc. The entire project will involve $1,000,000. E. E. Christopher is architect, and L. R. Bowen, chief engineer, for the Board.

The West Missouri Power Co., Pleasant Hill, Mo., has taken over the hydro-electric power plant of the Bolivar Electric Co., at Caplinger's Mill, on the Sac River, near Clinton, Mo. Plans are said to be under advisement for expansion, with the installation of additional equipment, including power lines. L. K. Green is president.

Detroit

DETROIT, Sept. 2.

BIDS are being asked by the Detroit City Gas Co., Detroit, the construction of a one-story addition to its meter shop, used for repair and parts work, 60 x 260 ft., at St. Aubin and Newton Streets, estimated to cost $60,000. Weston & Ellington, Stroh Building, are architects.

The AC Spark Plug Co., Flint, Mich., has construction in progress on a new three-story unit, and plans to have the building equipped and ready for service at an early date.

C. E. Macomber, Board of Commerce Building, Saginaw, Mich., is taking bids for the construction of a one-story automobile service, repair and garage building on Genesee Avenue, near Millard Street, 70 x 135 ft., to cost about $55,000, with equipment.

The Hoover Steel Ball Co., Ann Arbor, Mich., is arranging for enlargements at its local works to accommodate the machinery heretofore at the plant of the Imperial Bearing Co., Detroit, recently acquired, and will provide facilities for about 500 men, or approximately double the present quota.

The United States Register Co., Burchard Avenue, Battle Creek, Mich., manufacturer of registering and recording machines and parts, has awarded a general contract for the erection of a two-story building, 44 x 62 ft., estimated to cost $35,000, for which plans were prepared by E. W. Arnold, 488 East Main Street, Battle Creek.

The Wellar-Chevrolet Sales Co., 10370 West Jefferson Street, Detroit, representative for the Chevrolet automobile, will soon take bids for the erection of a one-story service, repair and garage building, at River Rouge, Detroit, to cost about $40,000. S. E. Hemey, Old Whitney Building, is architect.

The Johnson-Murphy Co., Detroit, manufacturer of gas-lighting equipment, has removed its works to 10226 Woodward Avenue, where increased production facilities will be provided.

The Metzger Co., Inc., Grand Rapids, Mich., will manufacture wood wheels for all trucks exclusive of automobile trucks, and will not make automobile wheels as was stated in THE IRON AGE of Aug. 14.

Canada

TORONTO, Sept. 1.

SALES of machinery and machine tools in the Canadian market have fallen off slightly during the past week. Considerable interest, however, is centered around exhibits at the Canadian National Exhibition, and dealers and builders expect to derive considerable business on this account in the early future. Many buyers from outside points are visiting the city and already a few orders have been booked at the exhibition. Inquiries for tools for replacement purposes are fairly numerous. The automotive industry is one of the principal customers at present, while the demand for woodworking equipment is also good.

R. Marshall, Washago, Ont., is in the market for a band and circular saw.

The C. Beck Mfg. Co., Penetanguishene, Ont., is asking for prices and information on complete equipment for a machine shop.

The Sidney Boat Co., Penetanguishene, Ont., is interested in the purchase of equipment for a plant including lathes, etc. H. M. Warnock is manager.

The Escouminac Lumber Co., Bonaventure, Que., is in the market for band saw, saw carriers and engine burner.

The Teck-Hughes Mining Co., Kirkland Lake, Ont., plans the construction of a new mill to be three times the capacity of present one.

Trade Changes

Winfield H. Smith, machinery manufacturer, Buffalo, announces the removal of factory location to Springville, N. Y., where a new and enlarged single story factory building has recently been completed. The office will be maintained in Buffalo at 10-16 Lock Street as in the past.

The Chemical & Vacuum Machinery Co., Inc., Buffalo, has been incorporated to acquire the patents and all development of the research plant established by E. G. Rippel and his associate, Charles O. Lavett. The officers elected are E. G. Rippel, president; John Casa Eguia, vice-president; William Schoellkopf, secretary-treasurer, and Charles O. Lavett, manager. The company will market a modern and improved line of apparatus for the manufacture of chemicals, electro-chemical products, dyes, pharmaceuticals, food and food by-products recovery apparatus, explosives, acids, extracts, etc., also special apparatus for the manufacture of milk powder, evaporated or condensed milk and other milk products. Mr. Rippel and Mr. Lavett were formerly connected with the Buffalo Foundry & Machine Co., Buffalo, manufacturer of a similar line of equipment.

The Gibb Instrument Co., manufacturer of electric welding equipment, Bay City, Mich., announces the appointment of D. A. Clements as representative in Missouri and Southern Illinois, with headquarters at 4167 Washington Avenue, St. Louis.

The Fuerst-Friedman Co., electrical power engineer, intends to move into its new plant at the corner of Hamilton and East Fifty-third streets, Cleveland.

The Oilgear Co., manufacturer of hydraulic presses, broaching machines, tunnel kiln pushers and variable delivery pumps, has moved into new quarters at 655-667 Park Street, Milwaukee.

The Edward R. Ladew Co., Glen Cove, N. Y., manufacturer of leather belting and leather specialties, has opened a sales office in Cleveland with headquarters at the machinery wareroom of the Hess-Schenck Co., 801 St. Clair Avenue. B. T. Phillips is in charge.

The Thompson Electric Welding Co., Pleasant Street, Lynn, Mass., has under consideration the purchase of a plant in that city for the purpose of transferring machinery and other equipment of its Cincinnati plant. It is possible that the Campbell Building, Stuart Street, will be taken.

The Farrel Foundry & Machine Co., Inc., Buffalo, will change its name to the Farrel Foundry & Machine Co., omitting the word "incorporated."

Smith & Gregory, 121 West Fifty-second Street, New York, makers of air springs, have changed to a corporation to be styled Smith & Gregory of N. Y., Inc.

The Bellingham Tank Co., Bellingham, Wash., has changed its name to the Schuman Steel & Machinery Co., dealer in steel products and machinery.

The Newcomb-David Co., 5779 Russell Street, Detroit, Mich., has succeeded to the business of the Grand Rapids Blow Pipe & Dust Arrester Co., the change being made merely to avoid confusion with another company having a similar name. The business is to be conducted as heretofore.

The Reliance Air Spring Co., New Haven, Conn., air controlled devices, is to be taken over by the Reliance Mfg. Co. of that city, recently incorporated, with an authorized capitalization of $400,000, of which $220,000 is issued. John F. Moran, Louis Lear and C. G. Swebilius, all of New Haven, are back of the new company.

The Pawling & Harnischfeger Co., Milwaukee, Wis., has engaged P. H. Sackett of 3445 Hennepin Ave., Minneapolis, Minn., to represent it in Minnesota, North and South Dakota.

J. F. Whalen, who for many years represented Manning, Maxwell & Moore in their Philadelphia office, has opened an office in the Bourse Building, Philadelphia, under the name of the Whalen Machinery Co., handling a general line of machinery and tools.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	6.75c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.25c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.50c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.15c.
Square, flats and hex	4.65c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.45c.	.....
Nos. 22 and 24	4.45c. to 4.60c.	5.10c.
No. 26	4.50c. to 4.65c.	5.15c.
No. 28*	4.50c. to 4.75c.	5.25c.
No. 30	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14	4.70c. to 4.85c.
No. 16	4.85c. to 5.00c.
Nos. 18 and 20	5.00c. to 5.15c.
Nos. 22 and 24	5.15c. to 5.30c.
No. 26	5.30c. to 5.45c.
No. 28*	5.60c. to 5.75c.
No. 30	6.10c. to 6.25c.

*No. 28 and lighter, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	—41	—24	½ in. Butt	— 4	+19
¾ in. Butt	—46	—32	¾ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt	—14	+ 6
2½-6 in Lap	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Bolts and Screws

Machine bolts, cut thread,
50 to 60 and 10 per cent off list
Carriage bolts, cut thread,
40 to 40, 10 and 10 per cent off list
Coach screws, 50 and 10 to 65 per cent off list
Wood screws, flat head iron,
75, 20 and 10 per cent off list

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	17¼c. to 18¾c.
High brass wire	17¾c. to 18¾c.
Brass rods	15 c. to 16 c.
Brass tube, brazed	25¼c. to 26¼c.
Brass tube, seamless	21½c. to 22½c.
Copper tube, seamless	22¾c. to 23¾c.

Copper Sheets

Sheet copper, hot rolled, 20⅝c. to 21⅛c. per lb. base.
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
			80 lb.	$6.15	$5.90
			90 lb.	6.30	6.05
			100 lb.	6.45	6.20
IC	$11.25	$8.85	IC	6.65	6.40
IX	12.85	10.85	IX	7.85	7.60
IXX	14.40	12.55	IXX	9.00	8.75
IXXX	15.75	13.85	IXXX	10.35	10.10
IXXXX	17.00	15.05	IXXXX	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	56c.
Bar	60c. to 65c.

Copper

Lake ingot	16 c.
Electrolytic	15½c.
Casting	14½c.

Spelter and Sheet Zinc

Western Spelter	7½c.
Sheet zinc, No. 9 base, casks	10.85c. open 11.60c.

Lead and Solder*

American pig lead	9¼c. to 9¾c.
Bar lead	11c. to 12c.
Solder, ½ and ½ guaranteed	39 c.
No. 1 solder	36 c.
Refined solder	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	13c. to 14c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

Business is more active and values are firm. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.50
Copper, heavy wire	11.00
Copper, light bottoms	9.50
Brass, heavy	6.50
Brass, light	5.50
Heavy machine composition	8.50
No. 1 yellow brass turnings	7.25
No. 1 red brass or composition turnings	7.75
Lead, heavy	7.00
Lead, tea	5.25
Zinc	3.75
Cast aluminum	15.00
Sheet aluminum	15.25